Welcome to GateWay Community College
Letter from the President

Welcome to GateWay Community College, one of the ten Maricopa Community Colleges. Serving the community for more than forty years, GateWay is known for its educational excellence and delivery of unparalleled training programs that prepare students to enter the workforce.

The college is committed to providing high-quality, affordable academic and occupational programs and a full range of easily-accessible student support services. Whether transferring to a university, upgrading career skills, receiving training to enter the workforce, or taking a class just for fun, GateWay offers options, with more than 125 certificate and associate degree programs.

Closely monitoring the changing needs of business and industries helps further prepare students for real-life work experiences, as exemplified by the award-winning Center for Health Careers Education, Honda and Toyota training facility, and a new business incubator opening soon.

GateWay Community College's friendly staff is always willing to offer support and resources to help students succeed. From our helpful advisors and counselors to our knowledgeable faculty and staff, you will find guidance, direction and leadership to help complete your ambitions at GateWay.

As president, I know I speak for the entire GateWay community in offering you a warm welcome and wishing you all the best as you strive to achieve your educational and career goals.

Sincerely,

Eugene Giovannini, Ed.D.
President

ACADEMIC CALENDAR 2011-2012

Fall Semester (2011)

Registration Begins...March 7, 2011
College Orientations ....August 16, 17 and 20, 2011
Saturday Registration (8:00 a.m.-12:00 p.m.)... August 20, 2011
*Classes Begin – Official Start Date of Semester (Saturday) .... August 20, 2011
*Classes Begin (Day and Evening) (Monday) .... August 22, 2011
Labor Day Observance – Campus Closed (Monday)..September 5, 2011
Last Day for Withdrawal Without Instructor's Signature – 16 Week Class .... October 7, 2011
Veterans Day Observance – Campus Closed (Friday) ....November 11, 2011
Thanksgiving Holiday – Campus Closed (Thursday-Sunday) ....November 24-27, 2011
Graduation and Certificate Application Deadline... December 1, 2011
Last day of Regular Classes/Students' Mid-Year Recess Begins (Thursday).................... December 15, 2011
Grades Due (Monday)... December 19, 2011
Winter Break – (Friday-Sunday) Campus Closed ....December 23 (noon), 2011 – January 1, 2012

Spring Semester (2012)

Registration Begins.. October 2, 2011
Campus Re-Opens (Monday).. January 2, 2012
College Orientations ....January 11 and 14, 2012
Saturday Registration (8:00 a.m.-12:00 p.m.)... January 14, 2012
*Classes Begin – Official Start Date of Semester (Saturday) .... January 14, 2012
Martin Luther King Day Observance – Campus Closed (Monday) .... January 16, 2012
*Classes Begin (Day and Evening) (Tuesday)... January 17, 2012
President's Day Observance – Campus Closed (Monday).. February 20, 2012
Last Day for Withdrawal without Instructor's Signature – 16 Week Class ....March 2, 2012
Spring Recess – No classes scheduled (Monday-Sunday) ....March 12-18, 2012
Graduation and Certificate Application Deadline..March 13, 2012
Campus Closed (Wednesday-Sunday) ....March 15-18, 2012
Commencement (Friday) .... May 4, 2012
Last Day of Regular Classes/Spring Semester Ends (Thursday).. May 10, 2012
Grades Due (Monday)... May 14, 2012

Summer I and II Semesters (2012)

Registration Begins...March 5, 2012
Memorial Day Observance – Campus Closed (Monday)... May 28, 2012
*Day and Evening Classes for 5 Week/8 Week Session Begin (Tuesday) .... May 29, 2012
Official End Date First Five-Week Session (Thursday) ....June 28, 2012
*Second Five-Week Classes Begin (Monday) ....July 2, 2012
Independence Day Observance – Campus Closed (Wednesday)...July 4, 2012
Eight-Week Evening Session Ends (Thursday) ....July 19, 2012
Second Five-Week Session Ends (Thursday).. August 2, 2012

*Some classes start before this date; check student schedule for exact class start date(s).
See college class schedule for specific dates for registration and schedule adjustment.
All dates subject to change.

VISION, MISSION, GOALS AND VALUES

Vision

GateWay Community College seeks to develop opportunities that are innovative and responsive to the diverse learning needs of our changing community.

Mission

GateWay Community College provides effective, accessible, and responsive educational services in a multicultural environment resulting in student development and success.

Goals

Access

Provide access to high-quality education for all students and strengthen educational pathways through increased educational and business partnerships.

Retention

Improve the retention of students through the achievement of their education or training goals.

Success

Increase the number of students who achieve their education or training goals, complete a degree or certificate, transfer to a university, and/or complete a workforce credential.

Community Engagement

Enhance civic, social, and cultural engagement opportunities by serving as the community's college.

Entrepreneurism

Expand and leverage resources that enhance the college's impact in the community through economic and workforce development.

Stewardship

Strategically leverage, grow, and utilize resources to ensure student success, responsible stewardship, and sustainability.

Values

Students are the primary reason we exist. We value our diverse learning community and respect our students for their life experiences, their achievements, and we appreciate their contributions. For these reasons, GateWay is committed to the following values:

Learning

as a lifelong endeavor of growth and self-discovery.

Diversity

as a celebration of the unique richness that all individuals bring to our community and to the learning opportunity it provides.

Service

to students, to each other, and to the community.

Teamwork

as a commitment to working together toward student success.

Integrity

as an essential element in our learning environment. We strive to be honest, authentic, consistent, and respectful in our words and actions.

Entrepreneurial Spirit

as critical in accomplishing our mission and goals. Through calculated risk-taking, we see possibilities . . . not limitations.

Accreditation

GateWay Community College is a Maricopa Community College, accredited by the Higher Learning Commission, a Commission of the North Central Association of Colleges and Schools (230 South LaSalle St, Suite 7-500, Chicago, IL. 60604-1413, Tel# (800) 621-7440), and its courses are approved by the Social Security Administration for Veterans Training. This school is authorized under federal law to enroll nonimmigrant alien students. (**http://www.ncahigherlearningcommission.org/**)

Nondiscrimination Policy

The Maricopa County Community College District does not discriminate on the basis of race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status, or genetic information in employment or in the application, admission, participation, access and treatment of persons in instructional or employment programs and activities.

ACHIEVE SUCCESS

Dear Students, Faculty, and Staff:

Please take the time to read carefully and reflect on the **Achieve Success** steps identified below. The objective of this document is to inform students of their personal responsibilities for their own education and to focus faculty and staff on what they should expect of students wishing to maximize their higher education experience.

Attendance
Students are expected to attend all classes, to *come to class prepared,* to be on time, to have all required materials, to complete all homework, and to be prepared to participate in classroom discussions and learning activities. Being absent does not excuse you from your responsibilities regarding material covered, quizzes, exams, homework, experiments or projects.

Critical Thinking
Today's workplace requires employees who can systematically apply knowledge and critical thinking skills. It is not enough to *memorize* facts or figures; students must be able to use information to further *investigate* their workplace as well as world events.

Honesty
There is no substitute for honesty. Students are responsible for knowing the standards of conduct in the Student Policies and Procedures section of the GateWay Community College Catalog and Student Handbook, and must adhere to these standards at all times.

Intensity
Attitude is everything! Education is important for personal success today more than ever before. Make education a priority. Success demands persistence and the intense commitment of time and talent.

Expectation
Expect to be *taught* well, but also accept your personal responsibility to *learn*. Faculty can expose you to an abundance of information, and they can provide you with opportunities and activities that are conducive to learning. As a student, you must seize opportunities to apply that information to specific situations that confront you in your everyday life.

Value
Value your education. Make it your personal goal to graduate with the knowledge and skills necessary to be one of the best at what you do.

Enlightenment
Ask yourself why you are seeking a higher education. Challenge yourself to *achieve success* at the highest level possible.

Eugene Giovannini

Eugene Giovannini, Ed.D.
President, GateWay Community College

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INSTRUCTIONAL PROGRAMS

GateWay Community College is a comprehensive community college with an emphasis on both academic and occupational programs. The college offers the Associate in Arts, Associate in Science, Associate in General Studies and Associate in Applied Science degrees. Courses, certificate and degree programs are available in the following areas:

CCL - Certificate of Completion
AAS - Associate in Applied Science

College Transfer Programs and Courses

INSTRUCTIONAL DIVISIONS

APPRENTICESHIPS/ CONSTRUCTION TRADES
COORDINATOR: Anna Lopez,
(602) 286-8676

ABA	-	Arizona Builders Alliance
ABC	-	Associated Builders & Contractors
BKL	-	Bricklaying
BLT	-	Building Safety & ConstructionTechnology
CRP	-	Carpentry
ELA	-	Electrician: Apprenticeship
HEO	-	Heavy Equipment Operations
HFA	-	Heat and Frost Technology
IEC	-	Independent Electrical Contractors
IND	-	Industry
IRW	-	Ironworking: Apprenticeship
MEC	-	Mechanical Apprenticeship
MWR	-	Millwright: Apprenticeship
PCM	-	Plastering/Cementing: Apprenticeship
PFT	-	Plumbing/Pipefitting: Apprenticeship
PNT	-	Painting/Decorating: Apprenticeship
ROF	-	Roofing: Apprenticeship
SML	-	Sheet Metal: Apprenticeship
TDR	-	Trade Related
WLD	-	Welding

BUSINESS AND INFORMATION TECHNOLOGIES
CHAIR: Ms. Patricia Edgar,
(602) 286-8572

ACC	-	Accounting
BPC	-	Business-Personal Computers
CCE	-	Court Reporting Continuing Education
CIS	-	Computer Information Systems
CNT	-	CISCO Networkingechnology
ECN	-	Economics
EPS	-	Entrepreneurial Studies
GBS	-	General Business
IBS	-	International Business
ITS	-	Information Technology Security
LAS	-	Legal Assisting
MGT	-	Management
MKT	-	Marketing
MST	-	Microsoft Technology
OAS	-	Office Automation Systems
REA	-	Real Estate
RTR	-	Realtime Reporting
SBU	-	Society & Business
TQM	-	Total Quality Management

HEALTH SCIENCES
CHAIR: Mr. Edward Hoskins,
(602) 286-8503

CRA	-	Clinical Research Associate
CRC	-	Clinical Research Coordinating
DMI	-	Diagnostic Medical Imaging
DMS	-	Diagnostic Medical Sonography
EEG	-	Electroneurodiagnostics Technology
HCC	-	Health Core Curriculum
HCE	-	Health Care Education
HCS	-	Hospital Central Service
HES	-	Health Science
HLR	-	Health Related
HSE	-	Health Science Education
HSM	-	Health Services Management
HUC	-	Health Unit Coordinator
ICE	-	Imaging - Continuing Education
MTR	-	Medical Transcription
NUC	-	Nuclear Medicine Technology
PON	-	Perioperative Nursing
PSG	-	Polysomnographic Technology
PTA	-	Physical Therapist Assisting
RES	-	Respiratory Care
RTT	-	Radiation Therapy
SGT	-	Surgical Technology

INDUSTRIAL TECHNOLOGY
CHAIR: Mr. John Kelly,
(602) 286-8647

ATP	-	Automation Technology
AUT	-	Automotive Technology
ELC	-	Electrical Technology
ELE	-	Electrical Technology
FAC	-	Facilities Maintenance Technology
GTC	-	General Technology
HVA	-	Heating, Ventilating, Air Conditioning & Refrigeration
IEC	-	Independent Electrical Contractors
MET	-	Manufacturing Technology
OSH	-	Occupational Safety and Health Technology
WRT	-	Hydrologic Studies-Water Purification Technology
WWM	-	Water & Wastewater Treatment Technology

LIBERAL ARTS
CHAIR: Ms. Yvette Garcia,
(602) 286-8725

AAA	-	Advancing Academic Achievement
ARH	-	Art Humanities
ART	-	Art
ASB	-	Anthropology
COM	-	Communication
CPD	-	Counseling/Personal Development
CRE	-	Critical Reading
EDU	-	Education
ENG	-	English
ENH	-	English Humanities
ESL	-	English as a Second Language
EXS	-	Exercise Science
GPH	-	Geography
HIS	-	History
HUM	-	Humanities
IFS	-	Information Studies
LBS	-	Library Skills
LRS	-	Leadership Skills
MHL	-	Music: History/Literature
PED	-	Physical Activities/Lifetime Fitness
PHI	-	Philosophy
POS	-	Political Science
PSY	-	Psychology
RDG	-	Reading
REL	-	Religious Studies
SOC	-	Sociology
SPA	-	Spanish
SWU	-	Social Work
THP	-	Theater Performance/ Production
WED	-	Wellness Education
WST	-	Women's Studies

MATH AND SCIENCES
CHAIR: Dr. James Crimando,
(602) 286-8699

BIO	-	Biology
CHM	-	Chemistry
FON	-	Food and Nutrition
GLG	-	Geology
GPH	-	Physical Geography
MAT	-	Mathematics
PHY	-	Physics

NURSING
DIRECTOR: Dr. Margi Schultz,
(602) 286-8530

HCR	-	Health Care Related
NCE	-	Nursing - Continuing Education
NUR	-	Nursing

OCCUPATIONAL PROGRAM MATRIX 2011-2012

The Maricopa County Community College Occupational Program Matrix identifies all programs currently available for offering within the 10 community colleges and two skill centers of the district. The programs are grouped under broad occupational areas as requested by the colleges. For specific information regarding individual programs, contact the college(s) listed as participating institutions.

College Acronyms/Name:

CG: Chandler Gilbert Community College
EM: Estrella Mountain Community College
GC: Glendale Community College
GW: GateWay Community College
MC: Mesa Community College

PC: Phoenix College
PV: Paradise Valley Community College
RS: Rio Salado College
SC: Scottsdale Community College
SM: South Mountain Community College

AGRICULTURE, FOOD, AND NATURAL RESOURCES

Agribusiness Sales and Service
Agricultural Production and Management
Agribusiness .... MC
(See Agribusiness Sales and Service and Horticulture sections for additional programs and related areas)
Urban Horticulture.. MC
(See Horticulture section for additional programs and related areas)
Equine Training and Management
Equine Science ....SC
Veterinary Technology/Animal Health .... MC
Horticulture
Landscape Aide... MC
Landscape Specialist... MC
(See Agricultural Production and Management section for additional programs and related areas)
Workforce Development: Horticulture .... RS
Workforce Development: Landscape Technology .... RS

ARCHITECTURE AND CONSTRUCTION

Air Conditioning and Refrigeration
Air Conditioning/Refrigeration/Facilities......................GW
Residential and Light Commercial Air Conditioning.....GW
Apprenticeship Related Instruction
Construction Trades: Bricklaying and Tilesetting ....GW
Construction Trades: Carpentry.....................................GW
Construction Trades: Concrete Form Builder.................GW
Construction Trades: Construction Management ....GW
Construction Management ....PC
Construction Trades: Millwrighting..............................GW
Construction Trades: Plastering and Cement Masonry ..GW
Construction Trades: Painting and Drywalling ....GW
Construction Trades: Sheet Metal ....GW
Construction Trades: Electricity....................................GW
Construction Trades: Heat and Frost Insulation............GW
Construction Trades: Heavy Equipment Operations......GW
Construction Trades: Ironworking ....GW
Construction Trades – Mechanical Trades: HVAC ....GW
Construction Trades – Mechanical Trades: Pipefitting....GW
Construction Trades – Mechanical Trades: Plumbing.....GW
Construction Trades – Mechanical Trades: Sheet Metal..GW
Construction Trades: Pipe Trades – Pipefitter-
    Refrigeration ....GW
Construction Trades: Pipe Trades –Plumbing................GW

Construction Trades: Plumbing ....GW
Power Plant Technology... GW, EM
Construction Trades: Roofing ....GW
Construction Trades: Steamfitting.................................GW
Construction Trades: Pipe Trades – Steamfitting ....GW
Building and Construction
Architecture .... MC
Architectural CADD Level III .... MC
Architectural Detailing CADD Level III...................... MC
Architectural CAD Technology....................................PC
Architectural Technology ....SC
Building Inspection .... EM, MC
Building Safety and Construction Technology ....PC
Building Safety Technology..SC
Civil Engineering Technology ....PC
Construction .... MC
Construction Drafting CADD Level III .... MC
Construction Management ....PC
Plan Review.. MC
Pre-Contractor Licensing................................... MC
Residential Drafting CADD Level II .... MC
Survey and Civil Drafting - CADD Level II .... MC
Workforce Development: Carpentry Level I .... RS
Workforce Development: Carpentry Level II .... RS
Workforce Development: Furniture Construction/
    Refinishing Level I .... RS
Workforce Development: Furniture Construction/
    Refinishing Level II .... RS

ART, A/V TECHNOLOGY, AND COMMUNICATION

Home Economics
Adolescent Development .... GC, RS
Adolescent Studies...PC
Adult Development and Aging .... GC, RS
Alteration Specialist .... MC
Apparel Construction ....PC
Costume Design and Production .... MC
Costuming..PC
Family Development ....PC
Family Life Education... GC, RS
Family Support...PC
Fashion Design ....PC
Fashion Design Level I..PC

Fashion Design Level II ....PC
Fashion Illustration...PC
Interior Merchandising..........................EM, GC, MC, PC
Interior Design ....MC, PC, SC
Interior Design: Advanced .... MC
Interior Design: Professional Level.............................SC
Kitchen and Bath Design...PC
Parent Education .... GC, RS
Pattern Design Level I..PC
Pattern Design Level II ....PC

Merchandising
Fashion Merchandising...PC
Fashion Merchandising & Design................................ MC
Image Consultant .... MC

Music
Audio Production Technologies .... GC, MC, PC, PV, SC
Dance Technology ....SC
Music Business ....CG, GC, MC, PC, PV, SC, SM
Sound Design .... MC, PV, SC

Commercial Art/Advertising Art
Computer Graphic Design ....PC
(See *Media Technology* section for additional programs and related areas)
Graphic Design, Animation and Web Publishing Design GC
Graphic Design: Visual Communication ....SC
Journalism .... GC, PV, MC, SC
Workforce Development: Graphic Arts Level I .... RS
Workforce Development: Graphic Arts Level II .... RS

AEROSPACE AND AVIATION
Aviation and Aeronautics
Aircraft Maintenance Technology ....CG
Aircraft Maintenance Technology (Part 147)..................CG
Airframe Maintenance (Part 147) ....CG
Airway Science Technology, Flight Emphasis ....CG
Flight Technology ....CG
Powerplant Maintenance (Part 147)..............................CG

BIOSCIENCE
Biomedical Research Technology ....CG, GW, SM
Biotechnology.. MC
Biotechnology and Molecular Biosciences......................GC

BUSINESS, MANAGEMENT, AND ADMINISTRATION
Accounting ....CG, EM, GC, GW, PC, RS, SM
Accounting Paraprofessional ....GC
Accounting – Specialized Para-Professional ....PV
Bookkeeping..SC
Microcomputer Accounting ....PV
Software Quality Assurance .... MC
(See *Business Administration* for additional programs and related areas)
Business Administration
Business... MC
Business (Fastrack)..SC
General Business..CG, GC, GW, MC, PC, PV, RS, SC, SM
(See *Management and Finance* section for additional programs and related areas)

International Business.. PV
International Trade .... MC
Management
Business Management...SM
Human Resources Management ....PC
Management...PC, MC, SC
Management I ....PC
Management II ....PC
Middle Management ....GC, PV
Military Leadership.. RS
Project Management.. MC
Public Relations...GC
(See *Middle Management* section for additional programs and related areas)
Retail Management............... CG, GC, GW, EM, MC, PC ,
                                     PV, RS, SC, SM
Retail Management and Marketing................................SC
Retail Sales Manager .... MC
Small Business .... MC
Small Business Entrepreneurship .... GC, SM
Small Business Management ....EM, SC
Small Business Start-Up ...... CG, GC, MC, PC, PV, RS, SM
Supervision ....GC
Supervision and Management I ....SM
Supervision and Management II ....SM
Middle Management
Public Relations.. MC
(See *Management* section for additional programs and related areas)
Office Occupations
Administrative Office Coordinator ....GC
Administrative Office Professional ....PV
Administrative Technology ....GW
Business Technology Specialist.....................................GW
Computer Applications...PC
Customer Service / Information Professional ....PV
Data Entry Clerk...EM
General Office Secretary ....EM, GC
Management of Clinical Information Technology..........GW
Management of Clinical Information Technology: Clinical
    Technology Consulting ....GW
Management of Clinical Information Technology: Health
    Information Technology Implementation Support .....GW
Management of Clinical Information Technology: Health
    Information Technology Technical Support................GW
Management of Clinical Information Technology: Health
    Information Technology Training...............................GW
Management of Clinical Information Technology:
    Implementation Management ....GW
Management of Clinical Information Technology: Practice
    Workflow and Information Management Redesign ....GW
Office Automation Systems .... SC, SM
Office Coordinator ....GC
Office Technology...GW
Paralegal Studies ....PC
Realtime Reporting-Advanced Placement CART ....GW

Realtime Reporting-Advanced Placement
   Broadcast Captioning..GW
Realtime Reporting-Broadcast Captioning.....................GW
Realtime Reporting-CART ....GW
Realtime Reporting-Judicial...GW
Realtime Reporting Scoping ....GW
Receptionist...EM
Technology Support Analyst Level I.............................. MC
Technology Support Analyst Level II .... MC
Word Processing ....SC

Total Quality Management
Automobile Insurance: Customer Service......................... RS
Automobile Policy: Customer Service .... RS
Broadband Telecommunications: Account Services.......... RS
Broadband Telecommunications .... RS
Broadband Telecommunications: Field Operations .... RS
Broadband Telecommunications: Technical
   Support Services.. RS
Credit Counseling: Customer Service .... RS
Customer Service Management ....EM
Human Services-Assistance: Customer Service................. RS
Human Services-Long Term Care: Customer Service .... RS
Human Services-Specialist: Customer Service .... RS
Insurance-Customer Service.. RS
Motor Vehicle: Customer Service................................... RS
Organizational Leadership .... CG, EM, GW, MC, PV, RS
Organizational Management............CG, EM, GW, MC, RS
Pharmacy: Customer Service... SM
Quality Customer Service ....GW, RS
Quality Process Leadership ....GW
Travel Agency: Customer Service .... RS
Utilities Customer Service.. RS

EDUCATION AND TRAINING
Early Childhood Education
Child and Family Organizations Management and
   Administration.. GC, RS
Child Development Associate (CDA) Preparation ... GC, PV
Curriculum for Young Children.....................................PC
Early Care and Education .... MC
Early Care Specialist .... MC
Early Childhood Education and Administration..............PC
Early Childhood Classroom Management ....PC
Early Childhood Development ....SM
Early Childhood Development: Montessori.................... RS
Early Childhood Education ....PV, GC, RS
Early Childhood Administration and
   Management .... GC, MC, RS, SM
Family Child Care Management.............................. RS, SC
Infant and Toddler Development............................. RS, SC
Workforce Development
Workforce Development and Community Re-Entry........ RS
Education
Bilingual Endorsement .... MC
ESL Endorsement.. MC

Foundations of Student Services ....EM
Gifted Education ....EM
Instructional Assistance...PC
Reading Specialist Endorsement .... MC
Teacher Assisting ....EM
Library Media Technology
Library Information Technology.................................... MC
Library Information Technology: Advanced................... MC
Library Information Technology: Basic .... MC
Library Information Technology: Practitioners.............. MC
Library Information Technology: School Library
   Media Center .... MC

ENVIRONMENTAL TECHNOLOGY
Environmental Technology
Environmental Science Technology................................GW
Geospatial Technologies... MC
Hydrologic Studies ....GW
Occupational Safety and Health Technology..................GW
Radiation Protection Technology ....EM
Wastewater Treatment..GW
Water Resources Technologies......................................GW
Water Treatment ....GW

FINANCE
Finance
Banking and Finance ....PC, EM
Certified Residential Appraiser...................................... MC
Home Inspection .... MC
Licensed Real Estate Appraiser..................................... MC
Real Estate .... MC, PC
Real Estate: Prelicense..PC
Residential Appraisal Trainee .... MC
Bank Account Management: Customer Service .... RS

GOVERNMENT AND PUBLIC ADMINISTRATION
Public Administration.. RS
Tribal Development...SC

HEALTH SCIENCE
Allied Health
Advanced Behavioral Health Sciences .... GC, SM
Advanced Nursing .... SM
Basic Behavioral Health .... GC, SM
Clinical Research Associate ....GW
Computed Tomography...GW
Developmental Disabilities Specialist............................GC
Diagnostic Medical Sonography ....GW
Electroneurodiagnostics ....GW
Health Information: Long Term Care Settings................PC
Health Information Technology.....................................PC
Health Services Management...GW
Health Unit Coordinating ....GW
Histologic Technology ....PC
Hospital Central Service Technology ....GW
Laboratory Assisting ....PC

Magnetic Resonance Imaging ....GW
Medical Assisting...PC
Medical Coding: Hospital-Based ....PC
Medical Billing and Coding: Physician-Based.................PC
Medical Front Office ....PC
Medical Laboratory Science ....PC
Medical Radiography...GW
Medical Transcription ....GW
Nuclear Medicine Technology....................................GW
Perioperative Nursing ....GW
Phlebotomy ....PC
Physical Therapist Assisting ....GW
Polysomnographic Technology..................................GW
Radiation Therapy..GW
Recovery Support ....SM
Respiratory Care...GW
Speech Language Pathology Assistant............................EM
Surgical Technology...GW

Emergency Medical Technology
Advanced Emergency Medical Technology
    (Paramedic)................................... GC, MC, PC, PV, SC
Basic Emergency Medical Technology...GC, MC, PC, PV, SC
Community Emergency Response Team (CERT): Level I....PC
Emergency Communications and Deployment................PC
Intermediate Emergency Medical Technology ....PC

Dental
Clinical Dental Assisting.. RS
Dental Assisting...PC
Dental Assisting Technology .... RS
Dental Hygiene ....PC, RS, MC
Dental Office Management .... RS

Nursing
Fast Track Practical Nursing ....GW
Nursing .... CG, EM, GC, GW, MC, PC, PV, SC
Nurse Assisting .... CG, GC, GW, MC, PC, SC, EM
Nursing Refresher...GW, MC
Practical Nursing ...... CG, GC, GW, MC, PC, PV, SC, EM

HOSPITALITY AND TOURISM
Food and Nutrition
Advanced Professional Culinary Arts ....SC
Baking and Pastry ....EM
Basic Culinary Studies ....EM
Commercial Baking..PC
Commercial Food Preparation ....PC
Culinary Arts...SC
Culinary Studies .... EM, PC, MC
Culinary Fundamentals ....SC
(See Hospitality *section for additional programs and related areas)*
Dietetic Technology...CG, PV
Food Service Administration...PC
Professional Food and Beverage Service............................PC
Sustainable Food Systems ....MC, RS
Hospitality
Airline Operations .... RS
Airline Operations: Ground Operations .... RS

Airline Operations: Initial Flight Attendant .... RS
Airline Operations: Passenger Services .... RS
Airline Operations: Reservations................................... RS
Airline Operations: Reservations and Ticketing
    Operations .... RS
Airline Operations: Vacations .... RS
Culinary Arts..SC
(See Food & Nutrition section for additional programs and related areas)
Hospitality and Tourism/Golf Management ....SC
Hospitality and Tourism/Hotel Management....................SC
Hospitality and Tourism/Restaurant Management...........SC
Hospitality and Tourism/Spa and Wellness Center
    Management ....SC
Hospitality/Hotel Management ....EM
Hospitality and Tourism/Tourism Development and
    Management ....SC

HUMAN SERVICES
Parks, Recreation, Leisure and Fitness Studies
Recreation Management ....MC, SC
Health and Physical Education/Fitness
Group Fitness Instructor...GC, MC
Personal Trainer ....GC
Strength and Conditioning Personal
    Trainer ....CG, EM, GC, MC, PV, SC, SM
Strength, Nutrition and Personal
    Training ....CG, EM, GC, MC, PV, SC, SM
Teaching, Healing, Meditation & Stress Management .....PV
Therapeutic Massage ....CG, PC
Yoga Instruction ....SC
Family and Consumer Science
Nutrition for Fitness and Wellness.........................GC, MC
Social Sciences
Addictions and Substance Use Disorders......................... RS
Addictions and Substance Use Disorders Level I .... RS
Addictions and Substance Use Disorders Level II............. RS
Clinical Research Coordinating ....GW
Deaf Studies ....PC
Interpreter Preparation...PC
Professional Addictions Counseling .... RS
Mortuary Science
Mortuary Science... MC

INFORMATION TECHNOLOGY
Computer Science
Advanced Computer Usage and Applications................... RS
Advanced Web Designer .... MC
Computer Applications Technology...............................EM
Computer Applications: Microsoft Office Specialist/
    Advanced .... MC
Computer Applications: Microsoft Office Specialist/
    Basic .... MC
Computer Hardware and Desktop
    Support.. CG, EM, SC
Computer Hardware and Network Support.....................SC
Computer Information Systems......... GC, GW, PC, PV, SC

Computer Networking Technology.................................PV
Computer Programming.. MC
Computer Systems Maintenance ....PV
Computer Technology .... RS
Computer Usage and Applications................................ RS
Database Development...SC
Desktop Publishing ....EM
Engineering Technology .... CG, GC
Game Technology...GW, MC
Geographic Information Systems................................. MC
Information Security..GC
Information Security Administration ....GC
Information Security Technology................................GC
Information Security Wireless Networks........................GC
Information Technology .... CG, SM
Information Technology: Programming and Systems
    Analysis...SM
Information Technology: Web and Graphic Design ....SM
Information Technology: Cisco Networking ....SM
Information Technology: Computer Applications
    Specialist ....SM
Information Technology: Network Server ....SM
Information Technology: Network Security ....SM
Information Technology Support.................................SM
Linux Associate................................EM, GC, MC
Linux Networking Administration.................EM, GC, MC
Linux Professional ....CG, EM, GC, MC, PV
Microcomputer Applications ....GC
(See Office Occupations section for additional programs and related areas)
Microcomputer Applications: Office Specialist/Core
    Level ....CG
(See Office Occupations section for additional programs and related areas)
Microcomputer Applications: Office Specialist/Expert
    Level ....CG
(See Office Occupations section for additional programs and related areas)
Microcomputer Business Applications ....CG, GC
(See Office Occupations section for additional programs and related areas)
Microsoft Desktop Support Technology...EM, GC, MC, PV
Microsoft Networking Technology...........EM, GC, GW, PV
Microsoft Product Specialist .... CG, EM, GC, GW, PV,
Microsoft Applications Development...................... MC, PV
Microsoft Systems Administration ....EM, GC, PV
Microsoft Systems Engineer.....................EM, GC, GW, PV
Multimedia and Business Technology .... MC
Network Administration...SC
Network Administration: CISCO Network Associate .... MC
Network Administration: CISCO Network Professional ....
    .... CG, MC, SM
Network Administration: Microsoft Windows Server ....
    .... CG, EM, GW, MC
Networking Administration: Cisco ....
    ....CG, EM, GC, GW, MC, SM
Networking System Administration .... MC
Networking Technology: Cisco .... CG, EM, GC, GW
Oracle Database Administration ....EM
Oracle Database Operations ....CG

Personal Computer Applications......................................SC
Programming.. RS
Programming and System Analysis ....
    ....CG, EM, GC, MC, PC, PV, SC
Software Development..SC
Web Design.............................GC, PV, EM, PC
Web Designer .... MC
Web Developer ....GC, GW, MC, PC, PV, EM
Web Development..SC
Web Server Administrator.. MC

MEDIA TECHNOLOGY
Animation
Animation ....GC
Broadcast Production...SC
Comic and Sequential Art.....................................PC
Digital Arts .... MC
Digital Photography ....PC
Digital Arts: Digital Illustration .... MC
Digital Arts: Digital Photography .... MC
Digital Arts: Graphic Design .... MC
Digital Arts: Web Design .... MC
Editing ....SC
eLearning Design Specialist .... RS
Film Analysis and Criticism ....SC
Film Production ....SC
Game Technology.. MC, GW
Graphic Design..GC
Media Arts: Computer Art/Illustration ....CG, PC
Media Arts: Digital Animation ....PC
Media Arts: Digital Imaging ....CG, PC
Media Arts: Web Design......................................PC
Motion Picture/Television Production ....SC
Multimedia ....GC
Multimedia Technology .... MC
Screenwriting...SC
Video Production Technology....................................GC
Web Publishing Design: Foundation ....GC
Web Publishing Design: Design and Authoring..............GC

MANUFACTURING
Drafting Technology
CAD Technology..GC
Basic CAD..GC
CAD/CAM/CNC I... MC
CAD/CAM/CNC II.. MC
CAD Application..GC
Caterpillar Technician Training.................................. MC
Commercial Drafting CADD Level II .... MC
Computer Aided Design and Drafting CADD Level I... MC
Computer Aided Drafting .... MC
CAD-BIM Technology ....PC
Electro/Mechanical Drafting...................................... MC
Electromechanical Manufacturing Technology............... MC
Industrial Design Technology ....GW
Industrial Design Technology: Design Specialist:

SolidWorks ....GW
Machining I...MC
Machining II ....MC
Machining and Product Development ....MC
Manufacturing Engineering Technology ....MC
Manufacturing Management ....MC
Manufacturing Technology ....MC
Manufacturing Welding..MC
Mechanical Drafting...MC
Micro Circuit Mask Design ....MC
Production Technology..MC
Production Technology: CNC Technology ....GW
Production Technology: Quality Assurance....................GW
Public Works Leadership ....EM
Truck Trailer Driving...GC

Electronics/Electrical Technology
Automation Technology...............................EM, GW, MC
Automation Technology Level I ....EM, GW, MC
Automation Technology Level II...........................GW, MC
Automation Technology Level III ....GW, MC
Computer and Networking Technology..........................GC
Electric Utility Technology ....CG
Electric Utility Design Technology..............................CG
Electrical Technology ....GW
Electronics Engineering Technology............................MC
Electronics Technology ....MC
Meter Technology..CG
Network Maintenance..GC
Telecommunications Technology ....SM
Workforce Development: Electrical Level I ....RS
Workforce Development: Electrical Level II....................RS

Engineering
Civil Engineering Technology..PC
Surveying Technology..PC

Welding Technology
Welding..MC
(See Manufacturing section for additional programs and related areas)

MARKETING, SALES, AND SERVICE
Marketing
Marketing..MC, PC, SC
Marketing I ....PC
Marketing II ....PC
Salesmanship ....MC

PUBLIC SAFETY, LAW, CORRECTIONS, AND SECURITY
Emergency Medical Technology
Advanced Emergency Medical Technology
    (Paramedic).................................... GC, PC, PV, SC, MC
Basic Emergency Medical Technology .... GC, MC, PC, PV, SC
Community Emergency Response Team (CERT):
    Level I..PC
Emergency Communications and Deployment...............PC
Intermediate Emergency Medical Technology ....PC
(See Allied Health section for additional programs and related areas)

Administration of Justice
Administration of Justice .... EM, GC, PC, PV
Administration of Justice-Comprehensive.......................PC
Administration of Justice-Fundamentals ....PC
Administration of Justice Studies ....CG, MC, SC
Advanced Corrections...RS
Basic Corrections...RS
Corrections...RS
Crime and Accident Scene Photography ....PC, SC
Crime and Intelligence Analysis...................................CG
Crime Scene Investigation ....PC, SC
Crime Scene Technology...SC
Detention Services ....RS
Evidence Technology ....EM, PC
Fingerprint Classification and Identification ....PC, SC
Forensic Investigation .... MC
Forensic Science..CG
Forensic Technology ....PC
Forensic Science: Crime Lab ....SC
Global Citizenship... MC
Homeland Security...CG
Information Security Forensics ....GC
Judicial Studies .... MC
Justice Studies... CG, SC
Law Enforcement Field Training..................................RS
Law Enforcement Investigator ....GC
Law Enforcement Technology.....................................RS
Law Enforcement ....SC
Law Enforcement Training Academy .... GC, CG
Legal Studies.. MC
Paralegal ....RS
Police Academy Preparation Level I ....SC
Police Science ....MC, SC
Police Supervision..GC
Public Safety Technology ....RS
Victimology.. MC

Fire Science
Driver Operator..................CG, GC, EM, MC, PC, PV, SC
Emergency Management ....GC, MC, PV, SM
Emergency Response and
    Operations ....CG, EM, GC, MC, PC, PV, RS, SC
Fire Academy... GC, SC
Fire Officer Leadership ....CG, EM, GC, MC, PC, PV, SC
Fire Science.........................CG, EM, GC, MC, PC, PV, RS
Fire Science Technology....................CG, GC, SC, PV, EM
Firefighter Operations..CG, EM, GC, MC, PC, PV, RS, SC
Hazardous Materials Response.......................................PC

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS
AGEC-S

TRANSPORTATION, DISTRIBUTION, AND LOGISTICS

Automotive Technology

Maricopa Skill Center

The Maricopa Skill Center (MSC), a division of GateWay Community College, offers entry-level courses and programs for hands-on job training at 1245 E. Buckeye Road, Phoenix. The more than 200 courses and 60 non-credit programs at Maricopa Skill Center certificates are open-entry /open-exit, and self-paced. Several of our programs hold credit articulation agreements with ASU and Gateway Community College and most programs culminate in leading industry certifications.

ACCOUNTING
Accounting Associate Certificate Program
Accounting Clerk Certificate Program
Accounts Payable Clerk Certificate Program
Accounts Receivable / Payable Clerk Certificate Program
Payroll Clerk Certificate Program
Small Business Accounting Course Bundle

ADMINISTRATIVE ASSISTANT
Administrative Assistant Certificate Program
Administrative Clerk Certificate Program

AUTO BODY
Auto Body Basic Metal Repair & Refinishing Certificate Program
Auto Body Basic Metal Repair Certificate Program
Auto Body Basic Refinishing Certificate Program

AUTOMATION TECHNOLOGY
Automation Technology Certificate Program

COMPUTER AIDED DRAFTING
AutoCAD Draftsmen 2-D Technician Certificate Program
AutoCAD Draftsmen 2-D, 3-D, & Solids Technician Certificate Program

COMPUTER REPAIR & NETWORKING
Computer Support Specialist Certificate Program

CONSTRUCTION TRADES
Construction Trades with Introduction to HVAC Certificate Program
Construction Trades Worker I Certificate Program
Construction Trades Worker II Certificate Program
Maintenance Carpentry Worker Certificate Program
Maintenance Electrician Worker Certificate Program
Maintenance Electrician Worker with Introduction to HVAC Certificate Program
Maintenance Plumbing Worker Certificate Program

COSMETOLOGY
Aesthetician Certificate Program
Cosmetologist Certificate Program
Nail Technician Certificate Program

CULINARY ARTS
Baker Certificate Program
Cook Certificate Program

CUSTOMER SERVICE
Call Center Operator Certificate Program
Customer Service Specialist Certificate Program

INDUSTRIAL SPRAY PAINTER
Industrial Spray Painter Certificate Program

INFORMATION PROCESSOR & DATA ENTRY
Data Entry Operator Certificate Program
Information Processor Specialist Certificate Program
Legal Administrative Assistant

MACHINE TRADES
CNC Machinist Certificate Program
Machinist's Assistant Certificate Program
Manual Machinist Certificate Program

MEAT CUTTER
Apprentice Meat Cutter Certificate Program
Meat & Deli Counterperson Certificate Program
Meat Department Helper Certificate Program
Meat Room Cleanup Certificate Program
Portion Control Cutter Certificate Program
Self-service Meat Wrapper Certificate Program

MEDICAL ASSISTANT
Medical Administrative Assistant Certificate Program
Medical Assistant Front & Back Office Certificate Program
Medical Biller/Coder Certificate Program

NURSING
Practical Nursing Certificate Program

ONLINE/HYBRID DELIVERY PROGRAMS
Automation Technology Certificate Program

PRINTING
Digital Press Operator Certificate Program
Offset Press Operator Certificate Program

SOLDERING
IPC Certified Soldering

TRAVEL & TOURISM
Reservations & Hospitality Representative Certificate Program
Travel & Tourism Specialist Certificate Program

WELDING
Arc Welder Certificate Program
Combination Welder - 2 Process Certificate Program
Combination Welder - 3 Process Certificate Program
Combination Welder - 3 Process with Intro to Pipe Welding Certificate Program
Combination Welder - 4 Process Certificate Program
Flux Core Welder Certificate Program
MIG Welder Certificate Program
TIG Welder/TIG Fingertip Welder Certificate Program

Southwest Skills Center

The SouthWest Skill Center at Estrella Mountain Community College, located at 3000 North Dysart Road, Avondale, offers entry-level courses and programs for hands-on job training. Our programs are listed below and reference any certificate issued by that program:

DISTRIBUTION LOGISTICS TECHNICIAN PROGRAM
Certified Distribution Logistics Technician

**MEDICAL ASSISTANT PROGRAM
(CERTIFICATE PROGRAMS)**
Medical Assistant Front/Back Office
Medical Assistant Front Office
Medical Assistant Back Office
Medical Billing & Coding

EMERGENCY MEDICAL TECHNOLOGY PROGRAM
Emergency Medical Technician

NURSING PROGRAMS (CERTIFICATE PROGRAMS)
Nurse Assistant Program
Practical Nurse Program

MARICOPA COMMUNITY COLLEGE DISTRICT
Administrative Regulations

The following are a portion of the Administrative Regulations used in managing the day-to-day operations of the Maricopa County Community College District (MCCCD) and are subject to change. Administrative Regulations are amended, adopted, or deleted as necessary and are subject to a formal approval process. Administrative Regulations are referenced as "AR" followed by a regulation number, which corresponds with the regulations on the MCCCD web site: **http://www.maricopa.edu/publicstewardship/governance/adminregs/adminregs_toc.php**

Some regulations include reference to Arizona Revised Statutes from the State of Arizona and are noted as "ARS" followed by a reference number.

GENERAL STATEMENT (AR 2.4.1)

The Maricopa Community Colleges are dedicated to providing a healthy, comfortable and educationally productive environment for students, employees and visitors.

NONDISCRIMINATION POLICY (AR 2.4.2)

It is the policy of the Maricopa Community Colleges (consisting of Chandler-Gilbert Community College, the District Office, Estrella Mountain Community College, GateWay Community College, Glendale Community College, Maricopa Skill Center, Southwest Skill Center, Mesa Community College, Paradise Valley Community College, Phoenix College, Rio Salado College, Scottsdale Community College, and South Mountain Community College) to promote equal employment opportunities through a positive continuing program. This means that Maricopa will not discriminate, nor tolerate discrimination, against any applicant or employee because of race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status, or genetic information. Additionally, it is the policy of the Maricopa Community Colleges to provide an environment for each job applicant and employee that is free from sexual harassment, as well as harassment and intimidation on account of an individual's race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status or genetic information.

This nondiscrimination policy covers all aspects of the employment relationship and admission to, access to, and treatment of students in the Maricopa Community Colleges' programs and activities including vocational education. This policy also prohibits discrimination on the basis of sexual orientation in the admission and treatment of students in the Maricopa Community Colleges' programs and activities and in the hiring, treatment, promotion, evaluation, and termination of employees.

EQUAL OPPORTUNITY STATEMENT (AR 2.4.3)

It is the policy of the Maricopa Community Colleges to promote equal employment opportunities through a positive continuing program. This means that Maricopa will not discriminate, nor tolerate discrimination, against any applicant or employee because of race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status or genetic information. Additionally, it is the policy of the Maricopa Community Colleges to provide an environment for each job applicant and employee that is free from sexual harassment, as well as harassment and intimidation on account of an individual's race, color, religion, gender, sexual orientation, national origin, citizenship satus, age, disability, veteran status or genetic information.

AFFIRMATIVE ACTION STATEMENTS

Affirmative Action Policy Statement for Individuals with Disabilities
In conformance with the provisions of Section 503 of the Rehabilitation Act of 1973, as amended, and the implementing regulations, 41 CFR 60-741.5 (a), as amended, Maricopa Community College District will not discriminate, or tolerate discrimination, against any applicant or employee because of physical or mental disability in regard to any position for which the known applicant or employee is qualified. Maricopa agrees to take affirmative action to employ, advance in employment and otherwise treat known qualified individuals with disabilities without regard to their physical or mental disability in all human resources selection and decision practices, such as the following: advertising, benefits, compensation, discipline (including probation, suspension, and/or termination for cause or layoff), employee facilities, performance evaluation, recruitment, social/recreational programs, and training. Maricopa will also continue to administer these practices without regard to race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status or genetic information.

Additionally, all applicants and employees are protected from coercion, intimidation, interference, or discrimination for filing a complaint or assisting in an investigation under the Act.

Affirmative Action Policy Statement for Other Eligible Veterans, Special Disabled Veterans, and Vietnam Era Veterans
In conformation with the Vietnam Era Veterans Readjustment Assistance Act of 1974, the Veterans Employment Opportunities Act of 1998, and the implementing regulations, 41 CFR 60-250(k), Maricopa County Community College District will not discriminate, or tolerate discrimination, against any applicant or employee because he or she is a special disabled veteran or Vietnam era veteran in regard to any position for which the known applicant or employee is qualified. Maricopa agrees to take affirmative action to employ, advance in employment, and otherwise treat known qualified special disabled veterans and Vietnam era veterans without discrimination based upon their disability or veteran status in all human resources section and decision practices, such as the following: advertising, benefits, compensation, discipline (including probation, suspension, and/or termination for cause or layoff), employee facilities, performance evaluation, recruitment, social/recreational programs, and training. Maricopa will continue to administer these practices without regard to race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status or genetic information. Additionally, Maricopa agrees to post all suitable job openings at the local office of the State employment service where the job opening occurs. This includes full-time, temporary greater than three days' duration, and part-time employment. Finally, all applicants, employees are protected from coercion, intimidation, interference, or discrimination for filing a complaint or assisting in an investigation under the Act.

Notice of Americans with Disabilities Act (ADA)/Section 504 of the Rehabilitation Act/Title IX Coordinator
Dr. Diana Muniz, Vice President of Student Affairs, 108 N. 40th Street, Phoenix, AZ 85034. (602) 286-8031.
Under the ADA and Section 504, the District and its colleges recognize the obligation to provide overall program accessibility throughout

its locations for persons with disabilities. The designated ADA/504/Title IX Coordinator at each college will provide information as to the existence and location of services, activities and facilities that are accessible to and usable by persons with disabilities. Requests for accommodation should be addressed to the coordinator. Likewise, under Title IX, there is an obligation to provide services and program accessibility in a gender-neutral manner. Students with disabilities may request catalog information in an alternative format from the college ADA/504 Coordinator.

DECLARACIÓNES DE ACCIÓN AFIRMATIVA

Póliza de No Descriminación

Es la póliza de los Colegios Comunitarios del Condado de Maricopa (The Maricopa Community Colleges) que consisten del Centro de Apoyo del Distrito, los colegios comunitarios de Chandler-Gilbert, Estrella Mountain, Gateway, Glendale, Mesa, Paradise Valley, Phoenix, Rio Salado, Scottsdale, South Mountain y el Centro de Capacitación de Maricopa, proveer igualdad en las oportunidades de empleo mediante un programa continuo positivo. Esto significa que Maricopa no descriminará o tolerará descriminación en contra de ningún aplicante o empleado debido a su raza, color, religión, sexo, orientación sexual, origen nacional, ciudadania, edad, incapacitación, estado de veterano/a o información genesica. Asi mismo, es la póliza de los Colegios Comunitarios proveer para cada aplicante y empleado un ambiente libre de acoso sexual como también de acoso intimidación referente a raza, color, religión, sexo, orientación sexual, origen nacional, ciudadania, edad, incapacidad, estado de veterano/a o información genesica.

Esta póliza de no descriminación cubre todos los aspectos de contratación del empleado, ingreso, acceso a, y tratamiento de alumnos en los Colegios Comunitarios de Maricopa los cuáles incluyen también programas de educación vocacional. Esta póliza también prohibe descriminación en base de orientación sexual en la admisión y tratamiento de estudiantes, en sus programas y actividades y en la contratación, tratamiento, promoción/ascensos, evaluación y despido de empleados.

Declaración de Igualdad de Oportunidad

Es la póliza de los Colegios Comunitarios del Condado de Maricopa proveer igualdad en las oportunidades de empleo mediante un programa continuo positivo. Esto significa que Maricopa no descriminará o tolerará descriminación en contra de ningún aplicante o empleado debido a su raza, color, religión, sexo, orientación sexual, origen nacional, ciudadania, edad, incapacidad, estado de veterano/a o información genesica. Agregando, es la póliza de los Colegios Comunitarios proveer para cada aplicante y empleado un ambiente libre de acoso sexual como también de acoso e intimidación referente a la raza, color, religión, sexo, orientación sexual, origen nacional, ciudadania, edad, incapacidad, estado de veterano/a o información genesica.

Declaración de Acción Afirmativa

Póliza y Declaración de Acción Afirmativa para Individuos con Incapacidades De acuerdo a lo que provee la Sección 503 de la Ley de Rehabilitación de 1973, como enmienda, y las leyes de implementación, 41 CFR 60-741.5 (a), declara que el Distrito de Colegios Comunitarios de Maricopa no descriminarán o tolerarán descriminación en contra ningún aplicante o empleado debido a su desabilidad/incapacitación física o mental referente a cualquier posición para la cuál el aplicante o empleado ha calificado. Maricopa promete tomar acción afirmativa para emplear, dar ascenso en empleo y tratar a dichos individuos con incapacidades sin hacer incapie en sus incapacidades físicas o mentales

en la selección de recursos humanos y prácticas decisivas como son las siguientes: anuncios, beneficios, compensación, disciplina (incluyendo período de prueba, suspensión, y/o terminación de empleo por causa de paro forzoso), facilidades para empleados, evaluación de trabajo, recrutamiento, programas sociales/recreacionales y entrenamiento. Maricopa continuará llevando a cabo éstas prácticas de no descriminar por razones de raza, color, religión, genero, orientación sexual, origen nacional, ciudadania, edad, incapacidad, estado de veterano/a o información genesica. Asi mismo, todo los aplicantes y empleados estan protegidos en contra de coacción, intimidación, interferencia o descriminación por quejas o por ayudar en una investigación cubierta bajo éste Acto.

Declaración de Póliza de Acción Afirmativa para Otros Veteranos Elegibles, Veteranos con Incapacitación Especial y Veteranos de la Era Vietnamita

Conforme a la ley de Reajuste y Asistencia para los Veteranos de la Era Vietnamita de 1974, acta de Oportunidades de Empleo para Veteranos de 1998 y reglamentos de implementación, 41 CFR 60-250(k), el Distrito de Colegios Comunitarios del Condado de Maricopa no descriminará ni tolerará descriminación en contra de ningún aplicante o empleado veterano o veterano de la Era Vietnamita con desabilidad/incapacitación especial referente a cualquier posición la cual dicho aplicante o empleado califique. Maricopa promete aplicar acción afirmativa para emplear, ascender en empleo y tratar a dichos veteranos incapacitados y de la Era Vietnamita que califiquen sin descriminar base a su desabilidad/incapacitación o condición de veterano en todas las áreas de recursos humanos y decisiones como son las siguientes: anuncios, beneficios, compensación, disciplina (incluyendo período de prueba, suspensión, y/o despido por causa o paro forzoso), facilidades para empleados, evaluación de trabajo, recrutamiento, programas sociales/recreacionales y entrenamiento. Maricopa continuará llevando a cabo estas prácticas sin descriminar por razones de raza, color, religión, genero, orientación sexual, origen nacional, ciudadania, edad, incapacidad, estado de veterano/a o información genesica. Maricopa promete anunciar todas las oportunidades de empleo disponibles en la oficina local del servicio de empleo del Estado donde el empleo esté disponible. Esto incluye empleo de tiempo completo, temporal de más de tres días de duración y empleo de tiempo medio. Finalmente, todos los aplicantes y empleados están protegidos en contra de coacción, intimidación, interferencia o descriminación por quejas o por ayudar en una investigación cubierta sobre este Acto.

Notificación del Acta de Americanos con Impedimentos (ADA)/Sección 504 del Acta de Rehabilitación/Coordinador del Título IX

Dr. Diana Muniz, Vice President of Student Affairs, 108 N. 40th Street, Phoenix, AZ 85034. (602) 286-8031.

De acuerdo a ADA y a la sección 504, el distrito y sus colegios reconocen la obligación de proveer acceso a programas en todas sus localidades a personas incapacitadas. El coordinador designado de ADA/504/Título IX proveerá información tocante a la existencia y localidad de servicios, actividades y facilidades que son accesibles y de utilidad a personas incapacitadas. Solicitudes para acomodación deben ser dirigidas al coordinador. Del mismo modo, bajo el Título IX, hay obligación de proveer acceso a servicios y programas de una manera imparcial segun el género.

Estudiantes incapacitados pueden solicitar información de catálogo en una forma diferente por medio del Coordinador designado por ADA/504 en cada colegio.

VISION

A Community of Colleges – Colleges for the Community – working collectively and responsibly to meet the life-long learning needs of our diverse students and communities.

MISSION

The Maricopa Community Colleges provide access to higher education for diverse students and communities. We focus on learning through:

• University Transfer Education
• General Education
• Developmental Education
• Workforce Development
• Student Development Services
• Continuing Education
• Community Education
• Civic Responsibility
• Global Engagement

VALUES

The Maricopa Community Colleges are committed to:

Community

We value all people – our students, our employees, their families, and the communities in which they live and work. We value our global community of which we are an integral part.

Excellence

We value excellence and encourage our internal and external communities to strive for their academic, professional and personal best.

Honesty and Integrity

We value academic and personal honesty and integrity and believe these elements are essential in our learning environment. We strive to treat each other with respect, civility and fairness.

Inclusiveness

We value inclusiveness and respect for one another. We believe that team work is critical, that each team member is important and we depend on each other to accomplish our mission.

Innovation

We value and embrace an innovative and risk-taking approach so that we remain at the forefront of global educational excellence.

Learning

We value lifelong learning opportunities that respond to the needs of our communities and are accessible, affordable, and of the highest quality. We encourage dialogue and the freedom to have an open exchange of ideas for the common good.

Responsibility

We value responsibility and believe that we are each accountable for our personal and professional actions. We are responsible for making our learning experiences significant and meaningful.

Stewardship

We value stewardship and honor the trust placed in us by the community. We are accountable to our communities for the efficient and effective use of resources as we prepare our students for their role as productive world citizens.

GENERAL REGULATION (AR 2.1)

General Statement

Compliance with Policies, Rules and Regulations

Every student is expected to know and comply with all current published policies, rules and regulations as stated in the college catalog, class schedule, and/or student handbook. Documents are available on each college's website.

Policies, courses, programs, fees and requirements may be suspended, deleted, restricted, supplemented or changed through action of the Governing Board of the Maricopa Community Colleges.

The Maricopa Community Colleges reserve the right to change, without notice, any materials, information, curriculum, requirements and regulations.

Note: The regulations that comprise the student section contain language that appears in various sources such as the Catalog Common Pages and the Student Handbook. All areas became Administrative Regulations with the 1996 adoption of the Governance Model. Changes are made annually either through the Administrative Regulations approval process, or by Board approval for those items that fall under its statutory duty, such as Tuition and Fees. In an effort to prevent duplication, topics in this section may be incorporated by reference, as they are featured in other areas of the manual and are noted accordingly.

The Maricopa County Community College District Vision, Mission and Values that are featured in the Common Pages are a part of approved Governing Board policy and are located in the policy section of the manual. As such, the following statement related to Outcomes Assessment that appears in the Common Pages is presented here as a general statement.

Outcomes Assessment

The mission of the Maricopa Community Colleges is "to create and continuously improve affordable, accessible, and effective learning environments for the lifelong educational needs of the diverse communities we serve." In order to evaluate how successfully the Maricopa County Community College District accomplishes this mission, student outcomes will be assessed as part of the continuous improvement process.

Students may be asked to participate in a variety of assessment activities at each college. Assessment results will be used to improve educational programs, services and student learning.

Admission/Registration/Enrollment

ADMISSION POLICY (AR 2.2.1)

Persons meeting the admissions criteria may attend any Maricopa Community College of their choice. Falsification of any admission materials or official college records may be cause for denial or cancellation of admission. Exceptions to the admissions policies may be requested through the Admissions and Standards Committee. Admission is determined in accordance with state law (ARS §§15-1805.01 and 15-1821) and regulations of the Maricopa Community Colleges Governing Board.

Admission Classifications

I. Admission of Regular Students

   A. Admission to the community college in Arizona may be granted to any person who meets at least one of the following criteria:

      1. Is a graduate of a high school, which is accredited by a regional accrediting association as defined by the United States Office of Education or approved by a State Department of Education or other appropriate state educational agency.

      2. Has a high school certificate of equivalency.

      3. Is at least 18 years of age and demonstrates evidence of potential success in the community college.

      4. Is a transfer student in good standing from another college or university.

II. Admission of Students Under 18 Years of Age

   A. Admission to the community colleges in Arizona shall be granted to any student who is under age 18 and who completes course prerequisites and meets any one of the following requirements:

      1. A composite score of 93 or more on the Preliminary Scholastic Aptitude Test (PSAT).

      2. A composite score of 930 or more on the Scholastic Aptitude Test (SAT).

      3. A composite score of twenty-two or more on the American College Test (ACT).

      4. A passing score on the relevant portions of the Arizona Instrument to Measure Standards test (AIMS).

      5. The completion of a college placement test designated by the community college district that indicates the student is at the appropriate college level for the course.

      6. Is a graduate of a private or public high school or has a high school certificate of equivalency.

   B. A community college may limit the number of semester hours in which the student may enroll to not more than six (6) credit hours.

   C. Home schooled students are exempt from this sub-section.

   D. A student shall not be denied admission because of age, lack of a high school diploma or high school certificate of equivalency, grade in school, lack of permission of school officials or lack of concurrent enrollment in a public or private school, if the student has achieved at least a specified score on a college entrance examination.

III. Specialized Vocational/Training Program

Students who enroll in vocational courses may be admitted on an individual basis with the approval of college officials if the student meets the established requirements of the courses for which the student enrolls and the college officials determine that the student's admission is in the best interest of the student.

IV. Western Undergraduate Exchange Program

The Western Undergraduate Exchange (WUE) program is a student exchange program coordinated by the Western Interstate Commission for Higher Education (WICHE) and administered by the Arizona Board of Regents. Through WUE, students who reside in western states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming) and meet the eligibility requirements, pay 150 percent of the regular resident tuition plus fees. Students must mark prominently on the Student Information Form that they seek admission as WUE students. Students may not apply as out-of-state students and expect to receive the WUE tuition rate after admitted. Once admitted as WUE students, students may not petition for in-state residency. Further information may be obtained from the Admissions and Records Office/Office of Student Enrollment Services.

V. Admission of F-1 Nonimmigrant Students

Prospective students should contact the Admissions and Records Office/Office of Student Enrollment Services or designated office for the international student application form(s). When completed, the form(s) should be returned to the Admissions and Records Office/Office of Student Enrollment Services or the International Education office with all requested supporting documents. After the file has been reviewed, a notice will be sent to the applicant indicating either acceptance or denial of admission.

To be guaranteed consideration for admission, all application materials must be received by July 1 for the fall semester and November 1 for the spring semester.

Prospective students seeking admission based on F-1 nonimmigrant status must provide proof of secondary school completion with documentation comparable to a United States high school diploma or higher degree. It is recommended that F-1 nonimmigrant students have graduated in the upper 50% of their secondary school (high school or equivalent) in order to ensure success in academic classes at this college. Applicants for admission to the college must have high school and college (if applicable) transcripts sent directly from the high school or college to the Admissions and Records Office/Office of Student Enrollment Services or designated office. In addition, it is the applicant's responsibility to have all transcripts translated into English and evaluated by a foreign credential evaluation service if necessary.

   A. **Admission to Academic Programs**

Applicants who wish to enroll in an academic program at the college must present evidence of English language proficiency. If the Test of English as a Foreign Language (TOEFL) is used to satisfy this requirement, the applicant must attain a score of at least 500 (on the paper-based TOEFL) or 61 (on the internet-based TOEFL, known as the iBT). If the International Language Testing System (IELTS) is used to satisfy this requirement, an IELTS overall Band Score of 5.5 or better is required, and a minimum IELTS individual Band Score of 5.0 on each module is recommended. The dean or director of Admissions and Records/Enrollment Services of the college may accept other proof of English language proficiency for admission purposes, such as the ASSET, ACCUPLACER, COMPASS or CELSA tests.

   B. **Admission to an Intensive English Program**

Applicants for admission to an Intensive English Program are advised to check with individual colleges for their respective

admission requirements. Applicants must provide evidence of at least an intermediate command of English by way of one or more of the following criteria:

1. At least six years of English language instruction as shown by the applicant's school transcript(s);
2. A minimum TOEFL score of 400 (on the paper-based TOEFL) or 23 (on the internet-based test);
3. An original letter of recommendation from a teacher, school principal or headmaster/ headmistress, or the director of an English language institute attesting to the applicant's proficiency at the intermediate level;
4. Other credentials, test scores, interview results, or evidence accepted by the coordinator of an intensive English program or the college's responsible designee. Students admitted to an Intensive English Program will not be allowed to enroll in courses outside those officially designated as part of the program unless and until they have met all of the prerequisites or other course requirements.
5. Foreign students under certain types of visas may need special permission to enroll and should contact the appropriate college official.

C. **Financial Support**

Evidence of financial support will be required prior to issuance of the I-20 form. The colleges have no scholarship or financial aid provisions for foreign students; therefore, students must be fully prepared to meet the necessary financial obligations for the full time they will be in the United States. The colleges estimate a student's average expenses for 10 months to be:

Tuition and Fees	$ 7,690 [1]
Living Expenses	10,140 [2]
Books	1,200 [3]
Health Insurance	1,000 [4]
Total	**$20,030** [5]

D. **Dependent Financial Guarantee**

Evidence of financial support for dependents of F-1 students (spouse and dependent children) is also required: $5,000 for the first dependent and $2,500 for each additional dependent.

E. **Health Insurance**

All F-1 students who have an I-20 issued by one of the Maricopa Community Colleges are required to purchase the Maricopa Community Colleges' international student health insurance plan. Health insurance coverage for dependents of F-1 students is highly recommended. The Maricopa Community Colleges contracts with an insurance provider annually to offer a health insurance plan for F-1 students. For more information contact the college Admissions and Records Office/Office of Student Enrollment Services or designated international student office.

Footnotes:(1) Based on 2011-2012 tuition and fee schedule.
(2) Based on estimated living expenses for two (2) semesters (10 months).
(3) Based on average new and used textbook prices. Assumes books are sold at the end of the semester.
(4) Based on the 2011-2012 insurance premiums for the mandatory Maricopa Community Colleges' International Student Health Plan.
(5) Applicants must provide evidence of this minimum amount of financial support before an I-20 is issued.

ADMISSION INFORMATION (AR 2.2.2)

Students must file a Student Information Form with the Admissions and Records Office/Office of Student Enrollment Services at the college of attendance. There is no charge for this service.

I. **Student Status**
   A. **Freshman** - A student who has completed fewer than 30 credit hours 100-level courses and above.
   B. **Sophomore** - A student who has completed 30 credit hours or more in 100-level courses and above.
   C. **Unclassified** - A student who has an associate degree or higher.

II. **Student Identification Number**
   Disclosure of the social security number is voluntary (ARS §15-1823). However, students must use social security numbers for reporting information pertaining to potential educational tax credits and for processing federal financial aid applications and Veterans Administration benefits.

III. **Residency for Tuition Purposes (Appendix S-1)**
   All students are classified for tuition purposes under one of the following residency classifications:
   A. **Maricopa County resident**
   B. **Out-of-County resident**
   C. **Out-of-State resident (including F-1 non-immigrant students)**

   Residency for tuition purposes is determined in accordance with state law (ARS §§15-1801 *et seq.*) and regulations of the Maricopa Community Colleges Governing Board. All of the Maricopa Community Colleges are subject to the above statutes and regulations. Students who have questions about their residency should contact the Admissions and Records Office/Office of Student Enrollment Services for clarification.

   A. **Implementation**
      1. Domicile status must be established before the student registers and pays fees. It is the student's responsibility to register under the correct domicile status.
      2. Enforcement of domicile requirements shall be the responsibility of the Chancellor of the Maricopa Community Colleges. The Chancellor has charged the Director of Admissions and Records or other designee at each college to make the initial domicile classification. In determining a student's classification, the college may consider all evidence, written or oral, presented by the student and any other information received from any source which is relevant to determining classification. The college may request written sworn statements or sworn testimony of the student.
      3. A request for review of the initial classification may be made to a district review committee. The request must be in writing, signed by the student and accompanied by a sworn statement of all facts relevant to the matter. The request must be filed with the admissions officer of the college within ten days of receipt of notification of classification as a non-resident. **Failure to properly file a request for review within the prescribed time limit constitutes a waiver of review for the current enrollment period.** The decision of the review committee shall be final.

   B. **Definitions**
      1. "Armed Forces of the United States" means the Army, the Navy, the Air Force, the Marine Corps, the Coast Guard,

the commissioned corps of the United States Public Health Services, the National Oceanographic and Atmospheric Administration, the National Guard, or any military reserve unit of any branch of the Armed Forces of the United States.

2. "Continuous attendance" means enrollment at one of the Maricopa Community Colleges as a full-time or part-time student for a normal academic year since the beginning of the period for which continuous attendance is claimed. Students need not attend summer sessions or other such intersession beyond the normal academic year in order to maintain continuous attendance.

3. "Maricopa County resident" means an individual who has lived in Maricopa County for at least fifty (50) days before the first day of classes of the semester. In-state residency must be established prior to country residency for those moving from other states. Refer to section C for guidelines.

4. "Domicile" means a person's true, fixed, and permanent home and place of habitation. It is the place where he or she intends to remain and to which he or she expects to return when he or she leaves without intending to establish a new domicile elsewhere.

5. "Emancipated person" means a person who is neither under a legal duty of service to his parent nor entitled to the support of such parent under the laws of this state.

6. "Full-time student" means one who registers for at least twelve (12) credit hours per semester.

7. "Part-time student" means one who registers for fewer than twelve (12) credit hours per semester.

8. "Parent" means a person's father, or mother, or if one parent has custody, that parent, or if there is no surviving parent or the whereabouts of the parents are unknown, then a guardian of an unemancipated person if there are not circumstances indicating that such guardianship was created primarily for the purpose of conferring the status of an in-state student on such unemancipated person.

C. **Criteria for Determining Residency**
1. **In-State Student Status**
   a. Except as otherwise provided in this article, no person having a domicile elsewhere than in this state is eligible for classification as an in-state student for tuition purposes.
   b. A person is not entitled to classification as an in-state student until the person is domiciled in this state for one year preceding the official starting day of the semester, except that a person whose domicile is in this state is entitled to classification as an in-state student if the person meets one of the following requirements:
      1) The person's parent's domicile is in this state and the parent is allowed to claim the person as an exemption for state and federal tax purposes.
      2) The person is an employee of an employer which transferred the person to this state for employment purposes or the person is the spouse of such an employee.
      3) The person is an employee of a school District in this state and is under contract

to teach on a full-time basis, or is employed as a full-time non-certified classroom aide, at a school within that school District. For purposes of this paragraph, the person is eligible for classification as an in-state student only for courses necessary to complete the requirements for certification by the state board of education to teach in a school District in this state. No member of the person's family is eligible for classification as an in-state student if the person is eligible for classification as an in-state student pursuant to this paragraph, unless the family member is otherwise eligible for classification as an in-state student pursuant to this section.

   4) The person's spouse has established domicile in this state for at least one year and has demonstrated intent and financial independence and is entitled to claim the student as an exemption for state and federal tax purposes or the person's spouse was temporarily out of state for educational purposes, but maintained a domicile in this state. If the person is a non-citizen, the person must be in an eligible visa status pursuant to federal law to classify as an in-state student for tuition purposes.

   c. The domicile of an unemancipated person is that of such person's parent.

   d. An unemancipated person who remains in this state when such person's parent, who had been domiciled in this state, removes from this state is entitled to classification as an in-state student until attainment of the degree for which currently enrolled, as long as such person maintains continuous attendance.

   e. A person who is a member of the Armed Forces of the United States and who is stationed in this state pursuant to military orders or who is the spouse or a dependent child of a person who is a member of the armed forces of the United States and who is stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student does not lose in-state student classification while in continuous attendance toward the degree for which he or she is currently enrolled.

   f. A person who is a member of the armed forces of the United States or the spouse or a dependent of a member of the armed forces of the United States is entitled to classification as an in-state student if the member of the armed forces has claimed this state as the person's state of home record for at least twelve consecutive months before the member of the armed forces, spouse or dependent enrolls in a university under the jurisdiction of the Arizona Board of Regents or a community college under jurisdiction of a community college district governing board. For purposes of this subsection, the requirement that a person be domiciled in this state for one year before enrollment to qualify for in-state student classification does not apply.

g. Beginning in the fall semester of 2011, a person who is honorably discharged from the armed forces of the United States shall be granted immediate classification as an in-state student on honorable discharge from the armed forces and, while in continuous attendance toward the degree for which currently enrolled, does not lose in-state student classification if the person has met the following requirements:

    1) Registered to vote in this state.

    2) Demonstrated objective evidence of intent to be a resident of Arizona which, for the purposes of this section, include at least one of the following:

       i. An Arizona driver license

       ii. Arizona motor vehicle registration

       iii. Employment history in Arizona

       iv. Transfer of major banking services to Arizona

       v. Change of permanent address on all pertinent records

       vi. Other materials of whatever kind or source relevant to domicile or residency status

h. A person who is a member of an Indian tribe recognized by the United States Department of the Interior whose reservation land lies in the state and extends into another state and who is a resident of the reservation is entitled to classification as an in-state student.

2. Alien In-State Student Status

a. An alien is entitled to classification as an in-state refugee student if such person has been granted refugee status in accordance with all applicable laws of the United States and has met all other requirements for domicile.

b. In accordance with the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (P.L. 104-208; 110 Stat. 3009-546), a person who was not a citizen or legal resident of the United States or who is without lawful immigration status is not entitled to classification as an in-state student pursuant to ARS §15-1802 or entitled to classification as a county resident pursuant to ARS §15-1802.01. A student will be assessed out-of-state tuition until such time that documentation of status is received in the Office of Admissions and Records/Enrollment Services and (eligibility for) residency is determined. Documentation must be provided prior to the end of the term in which residency classification is being requested. Documentation received after the end of the term will be used for residency determination in subsequent terms.

c. In establishing domicile, the alien must not hold a visa that prohibits establishing domicile in this state. After meeting other domicile requirements, students holding valid, unexpired visas in the following categories may be classified as in-state students:

    A   Foreign Government Official or Adopted Child of a Permanent Resident

    E   Treaty Traders

    G   Principal Resident Representative of Recognized Foreign Member Government to International Staff

    K   Spouse or Child of Spouse of a U.S. Citizen, Fiancé or Child of Fiancé of U.S. Citizen

    L   Intracompany Transferee, or Spouse or Child

    N6   NATO-6

    V   Spouses and Dependent Children of Lawful Permanent Residents

d. Students who hold visas as listed in section **c** above, or who were issued a visa of a type other than those listed in section **c** above and have submitted an I-485 to Citizenship and Immigration Services (CIS), may establish residency if other domicile requirements have been met. Residency eligibility for I-485 applicants may be considered one year after the date on the CIS Notice of Action letter (I-797) confirming application for permanent resident status. Students must provide required residency documentation in addition to the Notice of Action for residency consideration. In establishing domicile, the alien must be in a status that does not prohibit establishing domicile in this state for at least one year immediately preceding the official starting date of the semester. In the event that an alien student's parent is domiciled in this state and is allowed to claim the student as an exemption for state or federal tax purposes (3.c.i.2.a), the student's parent, in order to establish domicile, must hold a valid, unexpired visa in one of the categories listed in section **c** above.

3. Presumptions Relating to Student Status

Unless there is evidence to the contrary, the registering authority of the community college or university at which a student is registering will presume that:

a. No emancipated person has established a domicile in this state while attending any educational institution in this state as a full-time student, as such status is defined by the community college district governing board or the Arizona Board of Regents, in the absence of a clear demonstration to the contrary.

b. Once established, a domicile is not lost by mere absence unaccompanied by intention to establish a new domicile.

c. A person who has been domiciled in this state immediately before becoming a member of the Armed Forces of the United States shall not lose in-state status by reason of such person's presence in any other state or country while a member of the Armed Forces of the United States.

4. **Proof of Residency**

When a student's residency is questioned, the following proof will be required.

   a. **In-State Residency**

   1) An affidavit signed by the student must be filed with the person responsible for verifying residency.

   2) Any of the following may be used in determining a student's domicile in Arizona:
      i. Arizona income tax return
      ii. Arizona Voter registration
      iii. Arizona Motor Vehicle registration
      iv. Arizona Driver's license
      v. Employment history in Arizona
      vi. Place of graduation from high school
      vii. Source of financial support
      viii. Dependency as indicated on federal income tax return
      ix. Ownership of real property
      x. Notarized statement of landlord and/or employer
      xi. Transfer of major banking services to Arizona
      xii. Change of permanent address on all pertinent records
      xiii. Other relevant information

   b. **County Residency**

   1) An affidavit signed by the student must be filed with the person responsible for verifying domicile to prove continuous residency in a county for fifty (50) days, and

   2) Any of the following may be used to determine a student's county residency:
      i. Notarized statements of landlord and/or employer
      ii. Source of financial support
      iii. Place of graduation from high school
      iv. Ownership of real property
      v. Bank accounts
      vi. Arizona income tax return
      vii. Dependency as indicated on a Federal income tax return
      viii. Other relevant information

IV. **Concurrent Enrollment in Arizona Public Institutions of Higher Education (ARS §15-1807) (Appendix S-3)**

Under Arizona Revised Statutes §15-1807, it is unlawful for any non-resident student to register concurrently in two or more public institutions of higher education in this state including any university, college or community college for a combined student credit hour enrollment of more than six (6) credit hours without payment of non-resident tuition at one of such institutions. Any non-resident student desiring to enroll concurrently in two or more public institutions of higher education in this state including any university or community college for a combined total of more than six (6) credit hours who is not subject to non-resident tuition at any of such institutions shall pay the non-resident tuition at the institution of his choice in an amount equivalent to non-resident tuition at such institution for the combined total of credit hours for which the non-resident student is concurrently enrolled.

OTHER ADMISSION INFORMATION (AR 2.2.3)

I. **Veterans**

By Arizona statute, any failing grades from any Arizona university or community college that were received prior to military service will not be used to determine admission to the community college for the honorably discharged veterans with two years' service in the Armed Forces of the United States. Students admitted or readmitted to the community college under this statute are subject to progression, retention, graduation and other academic regulations and standards. (*Also see Withdrawal - Appendix S-7*)

II. **Ability to Benefit—Classifications**

Federal guidelines require that students without a high school diploma or certificate of equivalency who are applying for financial aid must demonstrate the ability to benefit. Evaluation during the admission process results in the student being admitted to the college with the status of Regular, Regular with Provisional Requirements or Special.

   A. "**Regular**" status, for the purpose of 2.2.3.2, is granted to an individual admitted to the college who is a high school graduate or has a GED certificate. A student without a high school diploma or GED certification and beyond the age of compulsory high school attendance may be a regular status student if the student has been assessed to benefit from college instruction by receiving qualifying scores on approved assessment instruments. All regular status students must be pursuing a degree/certificate or be in an eligible program.

   B. "**Regular with Provisional Requirements**" status, for the purpose of 2.2.3.2, is granted to a student admitted to the college who is not a high school graduate, does not have a GED certificate, and is beyond the age of compulsory high school attendance but has been assessed to benefit from college instruction requiring developmental/remedial coursework and is pursuing a degree/certificate or be in an eligible program.

   C. "**Special**" status, for the purpose of 2.2.3.2, is granted to a student admitted to the college for concurrent enrollment or pursuing one or more courses of special interest and who meets all the requirements for admission.

III. **Transcripts**

The Maricopa Community Colleges reserve the right to require an official transcript for admission to specific programs. For verification of course requisites and for determination of academic standing the official transcript must be mailed directly from the source institution to the college Admissions and Records Office/Office of Student Enrollment Services. It is the student's responsibility to ensure that official transcripts have been received and are complete. Students entering as high school graduates may be required to submit high school transcripts. Students entering as GED recipients may be required to present a copy of the high school equivalency certificate or official report of qualifying GED scores.

IV. **Educational Assessment**

All students are encouraged to undergo an educational assessment to determine course placement. Prospective students who do not possess a high school diploma or GED equivalence certificate are required to complete an educational assessment to determine their ability to benefit from college instruction. See Student Course Placement Process (AR 2.2.7)

CREDIT FOR PRIOR LEARNING (AR 2.2.4)

The Maricopa Community Colleges recognize that learning takes place in a variety of situations and circumstances. Many students have significant, demonstrable learning from experiences outside the traditional academic environment. Therefore, prior learning, not life experience, is the basis for the award of college credit. Students may be awarded no more than 30 credit hours, unless required by a specific program of study, within the Maricopa Community Colleges using one or more of the following assessment methods recommended by the Council for Adult and Experiential Learning (CAEL) and the American Council on Education (ACE):

- Articulated Programs
- Credit By Evaluation
- College-Level Equivalency Examinations

Credit awarded for prior learning does not count as hours in residence for graduation requirements. Exceptions may be granted at some MCCD colleges for specially approved programs. No more than 20 credit hours may be applied to AGEC. Credit received through Prior Learning Assessment is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. Therefore, students are strongly advised to meet with a program advisor or contact the college or university they plan to attend. For further information on Prior Learning Assessment, contact the Admissions and Records Office/Office of Student Enrollment Services.

I.   **Credit by Evaluation**
    The Maricopa Community Colleges offer credit by evaluation. The American Council on Education (ACE) evaluates military training and experiences as well as non-collegiate sponsored training programs and recommends credit awards based on this evaluation. The numbers of credits listed in the ACE guide are recommendations only. A college is not required to grant a student the number of credits recommended. The credits are included on a student's transcript.

    A.   **Educational Experiences in the Armed Services**
        The Maricopa Community Colleges may award credit for military experiences based on the ACE Guide to the Evaluation of Educational Experiences in the Armed Services. A student may receive college credit if:
        1.   Training parallels a discipline area offered through the Maricopa Community Colleges, and
        2.   Credit meets a program requirement or is used as elective credit. Upon request, individuals who have successfully completed Basic Training, four (4) credit hours in Physical Education will be awarded as indicated in the ACE Guide and the Community College of the Air Force Catalog. Official documentation of military training is required.

    B.   **College Credit Recommendation Service (CREDIT)**
        ACE evaluates training programs offered by business, industry, and government and publishes its credit recommendations in *The National Guide to College Credit for Workforce Training*. If a student has received training that appears in the guide, he or she may receive college credit if:
        1.   training parallels a discipline area offered through the Maricopa Community Colleges, and
        2.   credit meets a program requirement or is used as elective credit.

    C.   **Departmental Credit by Evaluation**
        Students may apply for Departmental Credit by Evaluation in certain courses by obtaining the appropriate form in the Admissions and Records Office/Office of Student Enrollment Services, and completing applicable paperwork and other requirements of the college, including payment of required fee. See fee schedule for appropriate fee. Fees are not refundable if a student fails to obtain credit. Students may not request:
        1.   The evaluation of a course a second time;
        2.   The evaluation of a course while currently enrolled in the course;
        3.   To establish credit in a previously completed course; and
        4.   To establish credit for a lower level of a course in which credit has been received. Exceptions may be granted at some MCCCD colleges for their unique programs of study.

        Certain departments have additional requirements that must be met before credit may be granted through departmental credit by evaluation. When credit is granted as outlined above, a notation of "credit by evaluation," and the number of credits will appear on the student's transcript. These credits are not used in computing the grade point average. Credit by evaluation is transferable within the Maricopa Community Colleges, but is not necessarily transferable to other colleges and universities.

II. **College-Level Equivalency Examinations**
    ACE has published credit recommendations for a number of national standardized examinations such as the ones listed below in the *Guide to Educational Credit by Examination*. The Maricopa Community Colleges use these recommendations as guidelines to award credit for equivalent Maricopa Community Colleges coursework as well as elective credit. Scores must be sent directly to the Admissions and Records Office/Office of Student Enrollment Services from the specific testing company(s) before credit is awarded. **All equivalency is subject to future review and possible catalog change.**

    A.   **Advanced Placement Examinations**
        Students who have taken an advanced placement course of the College Entrance Examination Board (CEEB) in their secondary school and who have taken an Advanced Placement Examination of the CEEB may receive course credit with a score of 3, 4 or 5. Scores must be received directly from CEEB before credit is awarded.

English Advanced Placement Recommendation:

Exam	Score	Credit Hours/Equivalency
English-Language and Composition	5 or 4	6 credit hrs/ENG101, ENG100, AA, AC, AD , eligible for Honors ENG102
English-Literature and Composition	5 or 4	6 credit hrs/ENG101, ENH110 eligible for Honors ENG102

Math Advanced Placement Recommendation:

Exam	Score	Credit Hours/Equivalency
Math-Calculus AB	5, 4, or 3	MAT220 or MAT221
Math-Calculus BC	5 or 4 3	MAT 220 or MAT 221, and MAT 230 or MAT 231, upon completion of MAT 241, MAT220 or MAT221 MAT220 or 221
Computer Science A and AB	4 or 5	CSC100

B. **College Level Examination Program**

The Maricopa Community Colleges may award credit to individuals who have received a score of 500 or more for the 1986 version of the College Level Examination Program (CLEP) General Examinations (610 on the 1978 version) and who meet or exceed the American Council on Education (ACE) recommended scores for awarding credit on the CLEP subject examinations. The ACE credit-granting score recommendation will be 50 (on the 20-80 scale) for all CLEP computer-based exams beginning July 1, 2001.

- Credit received through CLEP is transferable within the Maricopa Community Colleges, but is not necessarily transferable to other colleges and universities.
- Rio Salado College and Paradise Valley Community College are national CLEP test sites. For more information on registering for the CLEP examinations, contact Rio Salado College or Paradise Valley Community College.

English Composition:

Students pursuing credit for ENG 101 must take the English Composition with Essay. The Maricopa Community Colleges do not award credit for ENG 102 through CLEP examination.

Foreign Languages:

Credit earned through CLEP examination for French, German, and Spanish meets the language proficiency requirements of the Maricopa Community Colleges. For CLEP examinations taken prior to July 1, 2001, the Maricopa Community Colleges will grant credit based on the scaled scores indicated below:

Course	Spanish	French	German	Credit
101	40-49	39-48	39-45	4 (101)
102	50-54	49-53	46-50	8 (101, 102)
201	55-61	54-62	51-59	12 (101, 102, 201)
202	62-80	63-80	60-80	16 (101, 102, 201, 202)

At the discretion of the individual college, an oral exam at the 202 level may be administered.

C. **Defense Activity for Non-traditional Education Support Examination Program**

The Maricopa Community Colleges may award credit for the Defense Activity for Non-Traditional Education Support (DANTES) Examination Program to individuals who meet or exceed the ACE recommended scores for awarding credit on the DANTES subject examinations. The Maricopa Community Colleges do not award credit for ENG 102 through DANTES examination. Credit received through DANTES is transferable within the Maricopa Community Colleges, but is not necessarily transferable to other colleges and universities. The Assessment Center at Rio Salado College is a national test site. For additional information on registering for DANTES examinations, call (480) 517-8560.

D. **American College Testing Proficiency Examination Program**

The Maricopa Community Colleges may award credit for the American College Testing Proficiency Examination Program (ACT-PEP) based on the scores earned.

E. **Departmental Credit by Examination**

Students may apply for Departmental Credit by Examination in certain courses by obtaining the appropriate form in the Admissions and Records Office/Office of Student Enrollment Services, paying the required fee, and completing the examination and other requirements of the college. See fee schedule for appropriate fees.

Students may not request:

1. To challenge a course a second time;
2. To challenge a course while currently enrolled in the course;
3. To establish credit in a previously completed course; and
4. To establish credit for a lower level of a course in which credit has been received.
   - Exceptions may be granted at some MCCCD colleges for their unique programs of study.
   - Certain departments may have additional requirements that must be met before credit may be granted through departmental credit by examination.

- Only grades of A, B, C, D or P earned as a result of this examination will be recorded on the student's transcript. Fees are not refundable after the examination has been administered, regardless of results.
- When credit is granted as outlined above, a notation of "credit by examination," a grade and the number of credits will appear on the student's transcript. The grade is used in computing the grade point average.

College Level Examination Program (CLEP)

NOTE: The changes to English Composition CLEP were agreed upon at their respective Articulation Task Force (ATF) meetings prior to approval by APASC members in April, 2008. These cut scores, which represent equivalencies, were implemented July 1, 2009.

Table Revised August 2010

Examination	MCCCD		
General	**Score**	**Sem. Hrs.**	**Equivalency**
English Composition (Replaced by College Composition)	50 (July 1, 2001-June 30, 2010), 600 (1986 version), 500 (1978 version)	3	With essay qualifies for ENG101
Humanities	50 (July 1, 2001 or later), 500 (prior to July 1, 2001)	6	Elective Credit
Mathematics	50 (July 1, 2001 or later),500 (prior to July 1, 2001)	3	MAT122
Natural Sciences	50 (July 1, 2001 or later), 500 (prior to July 1, 2001)	8	Elective Credit*
Social Sciences & History	50 (July 1, 2001 or later),500 (prior to July 1, 2001)	5	Elective Credit
Subject			
Accounting, Principles of	ACE Score	6	ACC Elective Credit
American Government	ACE Score	3	POS110
American Literature	ACE Score	6	ENH241, 242
Analyzing & Interpreting Literature	ACE Score	3	Elective Credit
Biology	ACE Score	8	BIO Elective Credit*
Calculus (Previously Calculus with Elem Functions)	ACE Score	4	MAT221
Chemistry	ACE Score	9	CHM Elective Credit*
College Algebra (1993) (replaces College Algebra [1979])	ACE Score	3	MAT152
College Algebra - Trigonometry	ACE Score	3	MAT152
College Composition (Replaces English Composition with Essay)	ACE Score	3	With essay qualifies for ENG101
English Literature	ACE Score	3	Elective Credit
French Language, Level 1 (Previously French Language)	50-54 55-61	4 8	FRE101 FRE101, 102
French Language, Level 2 (Previously French Language)	62-65 66-80	12 16	FRE101, 102, 201 FRE101, 102, 201, 202
Freshman College Composition	ACE Score	3	With Essay ENG101
German Language, Level 1 (Previously German Language)	39-45 46-50	4 8	GER101 GER101, 102
German Language, Level 1 (Previously German Language)	51-59 60-80	12 16	GER101, 102, 201 GER101, 102, 201, 202
Human Growth & Development	ACE Score	0	No Credit
Information Systems & Computer Applications	ACE Score	3	CIS Elective Credit
Intro to Educational Psychology	ACE Score	3	EDU Elective Credit

Introductory Business Law	ACE Score	3	GBS Elective Credit
Introductory Psychology	ACE Score	3	PSY101
Introductory Sociology	ACE Score	3	SOC101
Mathematics, College	ACE Score	3	MAT142
Macroeconomics, Principles of (Replaces Introductory Macroeconomics)	ACE Score	3	ECN211
Management, Principles of	ACE Score	3	MGT Elective Credit
Marketing, Principles of	ACE Score	3	MKT271
Microeconomics, Principles of (Replaces Introductory Microeconomics)	ACE Score	3	ECN212
Spanish Language, Level 1 (Previously Spanish Language)	50-54 55-65	4 8	SPA101 SPA101, 102,
Spanish Language, Level 2 (Previously Spanish Language)	66-67 68-80	12 16	SPA101, 102, 201 SPA101, 102, 201, 202
Trigonometry	ACE Score	3	MAT182
U.S. History I – Early Colonization to 1877	ACE Score	6	HIS103
U.S. History II – 1865 to the Present	ACE Score	3	HIS104
Western Civilization – Ancient Near East to 1648	ACE Score	6	HIS100, 101
Western Civilization II – 1648 to the Present	ACE Score	3	HIS102

The general studies requirement in natural sciences (SQ and SG) and Literacy and Critical Inquiry (L) are not satisfied by CLEP.

Advanced Placement Credit

NOTE: The changes to AP scores to include Japanese were agreed upon at their respective Articulation Task Force (ATF) meetings prior to approval by APASC members in April, 2008. These cut scores, which represent equivalencies, were implemented fall 2009.

Table Revised August 2010

Examination	Score	MCCCD	Sem. Hrs.
Art – History	5 or 4 3	ARH101, 102 ARH101 or 102	6 3
Art – Studio Art (2-D Design) (Previously Art – Studio – General)	5 4	ART111, 112 ART111	6 3
Art – Studio Art (Drawing) (Previously Art – Studio – Drawing)	5 4	ART111, 112 ART112	6 3
Biology	5 or 4 3	BIO181, 182 BIO100 or Equivalent	8 4
Calculus AB (Previously Mathematics – Calculus AB)	5, 4, or 3	MAT220 or MAT221	4 or 5
Calculus BC (Previously Mathematics – Calculus BC)	5 or 4 3	MAT220 or MAT221 and MAT230 or MAT231 upon completion of MAT241 MAT220 or MAT221	8 to 10 4 or 5
Chemistry	5 or 4 3	CHM151/151LL and CHM152/152LL or CHM154/154LL CHM151, 151LL	8 or 9 4
Comparative Government and Politics (Previously Political Science – Comparative Government and Politics)	5 or 4	POS140	3

Computer Science A	5 or 4	CSC100	3
Computer Science AB	5 or 4	CSC100	3
Economics – Introductory Macroeconomics	5 or 4	ECN211	3
Economics – Introductory Microeconomics	5 or 4	ECN212	3
English – Language & Composition	5 or 4	ENG100AA, AC, AD and ENG101	6
English – Literature & Composition	5 or 4	ENG101 and ENH110	6
Environmental Science	5 or 4	No Credit	3
European History (Previously History – European)	5 or 4 3	HIS101, HIS102 HIS101	6 3
French – Language	5, 4, or 3	FRE101, 102, 201, 202	16
French – Literature	5, 4, or 3	FRE101, 102, 201, 202	16
German – Language	5, 4, or 3	GER101, 102, 201, 202	16
German – Literature	5, 4, or 3	GER101, 102, 201, 202	16
Japanese – Language and Culture (Previously Japanese – Language)	5 4 3	JPN101, 102, 201 and 202 JPN101, 102 and 201 JPN101 and 102	20 15 10
Latin: Vergil (Previously Latin – Language)	5 4 3	LAT101, 102, 201, 202 LAT101, 102, 201 LAT101, 102	16 12 8
Music Theory (Previously Music)	5 or 4	MTC105	3
Physics B	5 or 4 3	PHY111, PHY112 PHY111	8 4
Physics C – Electricity & Magnetism	5, 4 or 3	PHY112 with laboratory course work	4
Physics C – Mechanics	5, 4 or 3	PHY111 with laboratory course work	4
Psychology	5 or 4	PSY101	3
Spanish – Language	5, 4, or 3	SPA101, 102, 201, 202	16
Spanish – Literature	5, 4, or 3	SPA101, 102, 201, 202	16
Statistics	5, 4, or 3	MAT206	3
U.S. Government and Politics (Previously Political Science – American Government)	5 or 4	POS110	3
U.S. History (Previously History – American)	5 or 4	HIS103, HIS104	6

International Baccalaureate Diploma/Certificate Credit

F.   International Baccalaureate Diploma/Certificate
      Students who present an International Baccalaureate Diploma/Certificate may qualify for college credit. MCCCD College grants credit for college-level courses only. Credit is awarded according to the "International Baccalaureate Diploma/Certificate Credit" table.

Table Revised August 2010

Examination	Score	Sem. Hrs.	MCCCD Equivalency
Biology	7, 6, or 5 4	8 4	BIO181, 182 BIO182
Chemistry	7, 6, or 5 4	9 4	CHM151, 152 CHM151
Economics	7, 6, or 5 4	6 3	ECN211, 212 ECN211
English A	7, 6, or 5 4	6 3	ENG101, ENG100AB, AC, AD ENG100AB, AC, AD
English B	No Credit		None

Foreign Language A or B*	7, 6, or 5 4	8 4	Foreign Language 101, 102 Foreign Language 101
Geography (Previously Human Geography)	5, 4, or 3	3	GCU102
History (Previously History – American)	7, 6, or 5 4	6 3	HIS103, 104 HIS103
History (Previously History – European	7, 6, or 5 4	6 3	HIS101, 102 HIS101
Mathematics HL Mathematics SL Mathematical Studies SL Further Mathematics SL (Previously Mathematics)	7, 6, 5, or 4	4	MAT221
Physics	7, 6, or 5 4	8 4	PHY111, 112 PHY111
Visual Arts (Previously Art/Design)	7, 6, or 5 4	6 3	ART111, 112 ART112

III. Health Care Integrated Educational System (HCIES) Credit for Prior Learning

National/Regional Credential Recognition

Students who have recognized credentials related to healthcare may request an evaluation for course competency equivalency on a case-by-case basis through the Integrated Competency Assessment Network (ICAN). For more information contact the ICAN office at (480) 731-8240 or by email at ican@domail.maricopa.edu. Website: **http://healthcare.maricopa.edu/healthcarecourses.php.** When national or regional credentials are determined to be equivalent to the competencies demonstrated in corresponding courses, the recognition of external credentials will fulfill graduation credit requirements for the identified courses through Credit by Evaluation.

Credit by Examination and Credit by Skills Demonstration Assessment

Health care students may apply for credit for prior learning in certain courses. *Specific information and required forms can be found on* **http://healthcare.maricopa.edu/healthcarecourses.php.** Credit by Examination in the HCIES is determined through the use of HCIES Competency Assessment Tests (CATs) and/or Skills Demonstration Assessment under the direction of the HCIES Integrated Competency Assessment Network (I CAN). Students may apply for HCIES Health Care Pathway/Program Advanced Placement in certain courses by obtaining the appropriate form(s) in the Admissions and Records Office/Office of Student Enrollment Services, paying the required fee(s), and successfully completing the examination and/or skills demonstration and other requirements of the college. See fee schedule for appropriate fee. Fees are not refundable if a student fails to obtain credit. Students may not request:

1. To challenge a course a second time;
2. To challenge a course while currently enrolled in the course;
3. To establish credit in a previously completed course; or
4. To establish credit for a lower level of a course in which credit has been received.

Certain health care pathways/programs have additional requirements which must be met before credit may be granted through HCIES credit by examination and credit by skills demonstration assessment. Grades of A, B, C, D, or P, earned as a result of examination or skills assessment will be recorded on the student's transcript. Fees are not refundable after the examination/skills demonstration has been administered, regardless of results. A grade of P/Z is not used in computing the grade point average.

When credit is granted as outlined above, a notation of "*Credit by Examination*," "*Credit by Evaluation*," or "*Credit by Skills Demonstration*," and the number of credits will appear on the student's transcript. If a grade is assigned, it will be used in computing the grade point average.

IV. Transfer Credit

A. Transfer Credit into MCCCD

A student enrolling into one of the Maricopa Community Colleges after having attended another post-secondary institution can have course work evaluated for transfer credit. To be eligible for evaluation, course work must appear on an official transcript from the institution that offered the course work. The official transcript must be mailed directly from the source institution to the Admissions and Records/Enrollment Services Office of the receiving institution. The Admissions and Records/Enrollment Services Office at the receiving institution will complete a course-by-course evaluation for all submitted transcripts upon student request. The award of transfer credit shall not express or imply that all transfer credit will be fully applicable toward all Maricopa associate's degree and certificate requirements. In addition, the age of credit may be considered in applying credit towards degrees and certificate programs. Transfer credit that may be applied to meet associate's degree and certificate requirements at a Maricopa Community College is not necessarily transferable to other colleges and universities. The processes and policies that govern the award of transfer credit are as follows:

1. **Inter-Institutional:** Acceptance of courses that fulfill requirements other than general education is determined by individual Maricopa Community Colleges. Credits accepted in transfer from other Maricopa Community Colleges do not necessarily apply to all Maricopa degree and certificate programs.

2. **Maricopa Skill Center and the Southwest Skill Center:** The Maricopa Community Colleges have agreements with the Maricopa Skill Center and the Southwest Skill Center in limited areas of study. Students who have participated in these agreements may be granted credit for prior learning. No fees will be assessed for credits awarded for prior learning. Articulated course/program credit is transferable within the Maricopa Community Colleges, but may not necessarily be transferable to other universities and colleges. Students should contact the Admissions and Records/Enrollment Services Office for specific items related to these agreements.

3. **Arizona Public Community Colleges and Universities:** A course that meets general education requirements at any Arizona public community college district or university will be accepted in transfer to meet comparable general education requirements at any of the Maricopa Community Colleges provided the course was completed with a grade of C or higher (2.0 on a 4.0 scale). On an exception basis, P-grades may be allowed in the Arizona General Education Curriculum (AGEC) for credit transferred if documentation collected by the community college indicates that the P-grade is a C or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions. Acceptance of courses that fulfill requirements other than general education is determined by individual Maricopa Community Colleges.

4. **Domestic Institutions (U.S.):** The evaluation and award of community college transfer credit for course work originating at U.S. institutions that are regionally accredited will be based on official transcripts from all institutions previously attended. Regionally accredited institutions of higher education are those that are fully accredited by New England Association of Schools and Colleges, Middle States Association of Colleges and Schools, North Central Association of Colleges and Schools, Northwest Association of Schools and Colleges, Southern Association of Colleges and Schools, and/or Western Association of Schools and Colleges. Courses from institutions that have earned candidate status from a regional accrediting association will be reviewed on a case-by-case basis.

    The Admissions and Records/Enrollment Services Office at the receiving institution will complete a course-by-course evaluation for all submitted transcripts upon student request, and will determine the acceptance and applicability of transfer credit toward associate's degree and certificate requirements.

5. **Foreign Institutions:** Credits from foreign institutions will be reviewed for acceptance. It is the student's responsibility to have all transcripts translated into English and evaluated by an international Credential Evaluation Service before submitting them to the college.

6. **Limitations on the Award of Transfer Credit:** Generally, the Maricopa Community Colleges will not award credit for courses completed at institutions not regionally accredited.

B. **Transfer Credit from MCCCD**
    The Maricopa Community Colleges have developed formal agreements to facilitate the transfer of credit to four year colleges and universities. This is accomplished through the development of course and program articulation agreements. The Maricopa Community Colleges articulate with private, public, and international baccalaureate degree granting institutions that have achieved full accreditation or candidacy status with a regional accreditation commission. Maricopa transfer agreements are on behalf of the District as a whole and not with individual colleges within the district. Courses taken at any of the Maricopa Community Colleges are equally transferable by institutions wishing to articulate. Students planning to transfer to a university may be required to submit official transcripts from all institutions attended. The processes and policies that govern the transfer of credit are as follows:

1. **Inter-Institutional:** Students who transfer from one Maricopa Community College to another must have transcripts sent to the receiving institution for evaluation. Transcript evaluation will be conducted upon student request. Acceptance of courses that fulfill requirements other than general education is determined by individual Maricopa Community Colleges. Credits transferred from one Maricopa Community College to another may not necessarily apply to all Maricopa degree or certificate programs.

2. **Arizona Public Community Colleges and Universities:** Maricopa is a participant in the Arizona statewide transfer system. The **aztransfer.com** website is the official source of information for the statewide articulation agreements between the Arizona public community colleges and universities (Arizona State University, Northern Arizona University, and University of Arizona). Included on the **aztransfer.com** site is the course equivalency guide (CEG), which shows how courses transfer from Arizona public community colleges and tribal institutions to Arizona State University, Northern Arizona University, and the University of Arizona. The transferability of a course does not indicate how the course will apply to meet requirements for specific bachelor's degrees. **https://www.aztransfer.com/cgi-bin/webobjects/ admin_ceg**

3. **Domestic Institutions (U.S):** The Maricopa Community Colleges have transfer agreements with U.S. universities and colleges that are regionally accredited. These partnerships are formalized through district-wide articulation agreements and are designed to help students make a smooth transition when transferring from one of the Maricopa Community Colleges to a four-year college **or university. To access a list of institutions with which Maricopa has established an articulation agreement, visit: http://www.maricopa. edu/academic/ccta/artic/partner_list.php**

4. **Foreign Institutions:** The Maricopa Community Colleges have agreements with colleges and universities outside the United States that are approved by the Ministry of Education or other appropriate governmental agency. To access a list of international agreements, visit: **http://www.maricopa.edu/academic/ ccta/artic/partner_list.php**

5. **Limitations on the Transfer of Credit:** Generally, the following types of courses are not intended for transfer. See an advisor for specific information.
    - Remedial/developmental courses or courses numbered below 100
    - Arizona government university courses
    - Cooperative education
    - Experimental courses
    - Post baccalaureate courses
    - Contractual training for business, industry, and government
    - Some forms of credit for prior learning
    - Non-credit courses

6. **Time Limit For Transfer Coursework:** Students should be aware that the receiving institution may have age of credit limits on certain coursework to be used in transfer. Students should be knowledgeable about the policies on time limits for transfer coursework for the institution to which they plan to transfer.

V. **Servicemen's Opportunity College**

The Maricopa Community Colleges recognize the unique educational problems confronting many active duty military personnel in attaining their educational goals. The colleges have, therefore, established themselves as Servicemen's Opportunity Colleges. This means that the colleges recognize the peculiar needs of military personnel in that they provide courses on the various military bases located in Maricopa County and provide opportunities to complete courses through non-traditional means when education is interrupted by military obligations. Maricopa Community Colleges maintain liberal entrance requirements, offer maximum credit for educational experiences obtained in the Military Services, and follow residency statutes applicable to the special needs of servicemen. Maricopa Community Colleges follow the recommendations established by the American Council on Education. If, for any reason, Maricopa Community Colleges' status as a Servicemen's Opportunity College District is discontinued, it will nonetheless maintain its commitment to students previously enrolled. In addition, the option to enter into a "contract for a degree" allows the community college, as the college of record, to grant a degree upon completion of twelve (12) credit hours at the college and the satisfaction of graduation requirements.

ACADEMIC ADVISING (AR 2.2.6)

I. Academic advising assists students in the formation of educational plans and goals. This is an ongoing process of clarification, evaluation, re-clarification, and re-evaluation.

II. The ultimate responsibility for making decisions about life goals and educational plans rests with the student. The academic advisor helps to identify and assess alternatives and consequences.

III. The academic advisor also serves as a resource for accurate information. The advisor is knowledgeable about institutional policies, procedures, programs and resources and assists students in making use of printed and online materials.

IV. Advisors are in a position to help students identify their learning-related needs. Feedback received from advisors could be beneficial and should be used in policy-making decisions at all levels of the institutional administration.

With the help of an academic advisor, students will:

1. Gain an understanding of their academic abilities and interests
2. Be reinforced in their successes
3. Be provided information regarding the nature and purpose of higher education
4. Be referred to counselors and other resources to explore their interests, skills, abilities, and values
5. Define and refine educational goals and objectives and understand the consequences of alternative courses of action
6. Consider alternative careers through counselors, workshops, seminars, and other resources
7. Make course, certificate, and/or degree selections
8. Understand and utilize placement test results
9. Be encouraged to be active participants in their educational planning and college life
10. Be informed of support services that are available and how to make an appointment, if appropriate
11. Be aware of transfer articulation arrangements
12. Be informed about research results and general perceptions of student experiences at the institution
13. Receive accurate printed materials on academic majors, minors, and other degree and program requirements
14. Be encouraged to use the technology, which supports the academic advising process

STUDENT COURSE PLACEMENT PROCESS (AR 2.2.7)

The Maricopa Community Colleges are committed to providing students with opportunities for successful academic experiences. Student academic achievement is directly related to the proper initial course placement. Students choosing to enroll will register for the courses indicated by their English, mathematics, or reading course placement tests, or in a lower level course. Initial course placement should be discussed with an advisor or counselor who is skilled in assessing the student's needs and factors that affect student success.

I. **Testing for Course Placement**
    A. Students will be required to complete a course placement test under any one of the following conditions:
        1. The student is taking his or her first college credit English, reading and/or math course, or any college course for which English, reading or math is a prerequisite.
        2. The student is pursuing a degree and does not have current valid district approved course placement scores on file or does not have previous college credit in English, reading and math.
        3. The student does not have a high school diploma or GED, and is applying for federal financial aid.
        4. The student for whom English is not the primary language and is taking his or her first English as a Second Language class is required to take a test of English proficiency.
        5. College may determine additional conditions under which students would be required to complete course placement testing. Contact the college for additional conditions.
    B. Students will be strongly encouraged to complete a course placement test under any one of the following conditions:
        1. The student is taking a math course and has a college-level prerequisite on file that is more than five (5) years old.

2. The student is taking a college course for which English, reading or math is a prerequisite, and such credit is more than five (5) years old.

C. Students **MAY** be exempt from a course placement test if at least one of the following conditions applies:

1. The student has earned an associate or higher degree.
2. The student has earned college credits from a regionally accredited college in English, reading, and math with a grade of C or higher, and such credit is no more than five (5) years old.
3. The student has currently valid district approved course placement scores on file.

Note: Being exempt from taking a course placement test does not exempt the student from fulfilling the minimum graduation requirements.

II. **Course Placement**

A. Students choosing to enroll in the courses indicated will be advised and placed into courses based on highest test or retest scores.

B. Students will be permitted one re-test in English, reading or by math level after at least a 24-hour waiting period. An additional re-test is permitted one year from the date of student's original or re-test at any course placement testing site.

C. The vice president of student affairs or designee may approve re-testing for students with special needs or circumstances. The re-test date will then serve as the date of record.

D. Students may request a Course Placement Waiver from the appropriate department/division chair or designee. The waiver will be granted at the chair/designee's discretion. Additional testing may also be required. The signed waiver will be noted on the student's electronic record.

III. **Implementation of Policy**

To ensure consistency of the course placement process within the Maricopa Community Colleges:

A. All colleges shall accept the same approved course placement instruments.

B. All colleges shall adhere to the same approved cut-off scores.

C. Course placement scores, with the exception of the reading exemption, will be valid for two years from the date of the original or re-test.

IV. **Evaluation**

The Maricopa Community Colleges will provide an ongoing evaluation of the course placement process. An annual report shall be submitted to the Governing Board to indicate the policy's effectiveness noting the number of students assessed, their placement scores and their success in courses. Every three years a thorough review of the policy and procedures shall be implemented, including recommendations from the English, Reading and Math Instructional Councils regarding cut-off scores, course placement assessment tools and procedures.

REGISTRATION (AR 2.2.8)

Students must register according to the dates indicated, and in the manner described in the college class schedule. To be eligible for registration, students must have completed the appropriate steps listed under the Admissions section. The college may allow early or priority registration. Tuition and fees must be paid or payment arrangements made by the due date to secure class enrollment. Students may not attend a class for which they are not registered.

The colleges reserve the right to enroll students in courses. The final decision for admission to any class for students admitted under Section 2 of AR 2.2.1 will be determined by the designated college administrator in consultation with the department chairperson and/or faculty.

TUITION AND FEES (AR 2.2.9)

Tuition and fees are public monies within the jurisdiction and responsibility of the Maricopa Community Colleges Governing Board under the laws and regulations of the State of Arizona and must be administered by the Governing Board. The Governing Board reserves the right to change tuition and fee charges when necessary without notice. All students are classified for tuition purposes under one of the following residency classifications:

1. Maricopa County resident
2. Out-of-County resident
3. Out-of-State resident (including F-1 non-immigrant students)
4. Unclassified, Out-of-County, Out-of-State (1-6 credit hours system-wide)

Residency for tuition purposes is determined in accordance with state law (ARS §§15-1801 *et seq.*) and regulations of the Maricopa Community Colleges Governing Board. All of the Maricopa Community Colleges are subject to the above statutes and regulations. Students who have questions about their residency should contact the Admissions and Records Office/Office of Student Enrollment Services for clarification.

Students attending more than one Maricopa Community College will be assessed fees for their enrollment at each of the Maricopa Community colleges/centers. (Students who are considered to be out-of-state residents for tuition and fees purposes should refer to the Concurrent Enrollment in Arizona Public Institutions of Higher Education policy under the Residency section of this publication.)

I. **Time of Payment**

All tuition, fees, assessments and deposits must be paid at the time of registration or by the specified deadline date and in accordance with the fee schedule approved by the Maricopa Community Colleges Governing Board.

II. **Tuition and Fees Schedule** (Effective July 1, 2011 for fall, spring and summer Sessions)

Current information can be found at **http://www.maricopa.edu/publicstewardship/governance/adminregs/appendices/S-4.php**

The following is the tuition and fees schedule for 2011-2012 and is provided for reference. **These tuition and fees are subject to change.** Consult the college's Admissions and Records Office/Office of Student Enrollment Services for course fees in effect during the semester/term in which you intend to register.

Appendix S4: Tuition and Fees

2011-2012	Maricopa County Resident (In County)	Out of County Resident* (Apache, or Greenlee County Resident without Out-of-County Residence Affidavit)	Non-Resident Living in Arizona	Non-Resident Living in Another State/ Country	Western Undergraduate Exchange (WUE)
	IN-STATE		**OUT-OF-STATE**		
Credit Hours	A	B	C**	D***	E
1	76.00	300.00	317.00	317.00	114.00
2	152.00	600.00	634.00	634.00	228.00
3	228.00	900.00	951.00	951.00	342.00
4	304.00	1,200.00	1,268.00	1,268.00	456.00
5	380.00	1,500.00	1,585.00	1,585.00	570.00
6	532.00	1,800.00	1,902.00	1,902.00	684.00
7	456.00	2,100.00	2,219.00	2,219.00	798.00
8	608.00	2,400.00	2,536.00	2,536.00	912.00
9	684.00	2,700.00	2,853.00	2,853.00	1,026.00
10	760.00	3,000.00	3,170.00	3,170.00	1,140.00
11	836.00	3,300.00	3,487.00	3,487.00	1,254.00
12	912.00	3,600.00	3,804.00	3,804.00	1,368.00
13	988.00	3,900.00	4,121.00	4,121.00	1,482.00
14	1,064.00	4,200.00	4,438.00	4,438.00	1,596.00
15	1,140.00	4,500.00	4,755.00	4,755.00	1,710.00
16	1,216.00	4,800.00	5,072.00	5,072.00	1,824.00
17	1,292.00	5,100.00	5,389.00	5,389.00	1,938.00
18	1,368.00	5,400.00	5,706.00	5,706.00	2,052.00

*Students from any other county in Arizona are considered Maricopa County Residents (in county) due to a reciprocal arrangement with that county. Reciprocal agreements allow for in-county tuition rates for residents of all Arizona counties *except* Apache and Greenlee counties without an Out-of-County Residence Affidavit.*

** *According to ARS §15-1802F, "A person who is a member of an Indian tribe recognized by the US Department of the Interior whose reservation lies in this state and extends into another state and who is a resident of the reservation is entitled to classification as an in-state student." Therefore, unclassified and out-of-state surcharges do not apply to such students.*

*** *According to ARS §15-1470, community college districts may offer credit and noncredit courses and services outside of this state. A district is not entitled to state aid payments for students who are provided courses and services outside of this state.*

  A. **Determine Student Residency Status**
      Refer to admissions information (AR 2.2.2) of the college catalog for residency information and to review the requirements for classification as a Maricopa county resident. Contact the Admissions and Records Office/Office of Student Enrollment Services if you have questions about residency requirements.
  B. **Use the Chart to Locate Tuition Charges**
      Determine the correct column based on your residency status and then select the number of credit hours. The general tuition chart is provided for reference only.
  C. **Add Any Additional Fees**
      1. A one-time, per semester $15 registration fee is due by the official start of the term (semester) or by the specified due date or at time of registration.
      2. There may also be additional course fees for classes, please refer to the college schedule for course fees.
      3. If you choose to audit a class, add an additional fee of $25 per credit hour.
      4. Additional course fees may apply for specific courses. Check with the college's Admissions and Records Office/Office of Student Enrollment Services for a current listing of course fees.
  D. **Pay Your Fees**
      Payment of fees may be made by cash, check, money order, VISA, MasterCard, Discover or American Express. Payment Plan options are also available.

Note: If you do not pay your tuition and fees at the time of registration or by the specified due date, you may be dropped from your classes and may be responsible for the tuition and fees based on the refund schedule which outlines the refund deadlines for each course.

Skill Center Tuition Rates

Regular ....$5.00 per contact hour
Nursing Assistant ....$6.00 per contact hour
Practical Nursing ....$6.00 per contact hour

Credit by Examination & Credit by Evaluation (excludes Allied Health courses)

Regular Rate ....$74.00 per credit hour
Contract Rate ....$37.00 per credit hour

III. Outstanding Debts

Any debt or returned check may revoke a student's current enrollment and the student's right to register in subsequent semesters at all Maricopa Community Colleges. Delinquent debts may require penalties, late charges, collection costs, and/or legal fees to be paid before good standing is restored to the student.

The following procedure will be used for the collection of returned checks and other outstanding debts:

A. The designated college official or fiscal officer is responsible for:
1. Verifying the student's district wide debt,
2. Attempting to notify the student of the debt and
3. Attempting to collect the debt.

B. All Maricopa Community College services will be withheld pending payment of debt (at designated college office) with cash, certified check or money order or online with debit or credit card or in person with credit card. Student may be withdrawn from classes.

C. If other collection attempts fail, the Maricopa Community Colleges District Office will either collect or use other means available, including:
1. Collection agency, requiring payment of collection fees by the student;
2. The Tax Refund Setoff Programs as stated in ARS §42-1122;
3. Litigation, requiring payment of court costs and legal fees by the student.

D. Debt Holds may be lifted by the appropriate College or District business services designee for the extension of services provided that at least one of the following conditions are met:
1. MCCCD staff verify that full payment has been made to another College;
2. The College can deduct payment from a financial aid award made to the student (referring to student authorization guidelines for regulations on applying federal financial aid to debt balances);
3. A third party not related to the student, such as an employer or state agency, makes a verified payment directly to the College;
4. It is determined and verified with the appropriate MCCCD office that the hold resulted from a system error and the error is due to an activity that requires correction by the appropriate College or District personnel.

IV. Discounted Fees and Waivers

A. Citizens 62 years of age and older shall be issued ID cards that allow them the privilege of attending events at no cost and that allow them to use the library facilities.

B. Employees, Dependents and Mandated Groups
The Maricopa Community College District waives tuition and student activity fees for credit-hour courses for employees and their dependents, and for legislatively mandated groups. Special fees and fees for Non-credit/Special lnterest Community Services courses are not waived.

C. Tuition and Registration Fee Waiver for Members of the Pima-Maricopa Indian Community Tuition and fee waivers shall be funded through Auxiliary Fund Monies for college credit courses for the enrolled members of the Pima-Maricopa community who live on the Pima-Maricopa Reservation.

All ther guidelines and procedures established for the purpose of administering waivers, affidavits and exemptions are outlined in the Maricopa County Community College District tuition waiver manual.

REFUND POLICY (AR 2.2.10)

I. Refund Policy for Credit Classes

Students who officially withdraw from credit classes (in fall, spring, or summer) within the withdrawal deadlines listed below will receive a 100% refund for tuition, class and registration processing fees. Deadlines that fall on a weekend or a college holiday will advance to the next college workday except for classes fewer than 10 calendar days in length or as specified by the college. Calendar days include weekdays and weekends. Refer to individual colleges for withdrawal and refund processes. Never attending is not an allowable refund exemption or an excuse of the debt incurred through registration.

Length of Class	Official Withdrawal Deadlines for 100% Refund
1-9 calendar days	Prior to the class start date
10-19 calendar days	1 calendar day including the class start date
20-29 calendar days	2 calendar days including the class start date
30-39 calendar days	3 calendar days including the class start date
40-49 calendar days	4 calendar days including the class start date
50-59 calendar days	5 calendar days including the class start date
60-69 calendar days	6 calendar days including the class start date
70+ calendar days	7 calendar days including the class start date

Course fees and registration processing fees will be refunded only if the student qualifies for a 100% refund. Debts owed to any MCCCD college must be satisfied before any refunds are paid to the student. Refunds for students receiving federal financial assistance are subject to federal guidelines. Requests for exceptions to the refund policy must be filed within one year from the semester in which the course was taken.

II. Refund Policy for Non-Credit Classes

Unless otherwise specified, students must drop non-credit classes prior to the course start date to be eligible for a 100% refund.

III. Canceled Classes

When a class is canceled by the college, a 100% refund will be made.

IV. Refund Exceptions

Students withdrawing from a college or from courses for one of the following reasons must submit a written request for a refund exception to the Admissions and Records Office/Office of Student Enrollment Services or designated college official:

A. A student with a serious illness, verifiable by a doctor's written statement that the illness prevents the student from attending all classes for the semester. The doctor's statement must be on file with the college before a refund can be given.

B. Serious illness or death of an immediate family member that prevents the student from attending all classes for the semester. Immediate family members include spouse/partner, father, mother, grandfather, grandmother, child, foster child, grandchild, stepchild, sibling, stepsibling, stepfather, stepmother, or spouse's/partner's father, mother, grandfather, grandmother, or in-laws in any one incident. Appropriate documentation must be provided before a refund can be given.

C. Death of a student. Appropriate documentation must be provided before a refund can be given.

D. A student in the Armed Forces or the Arizona National Guard who is called to active duty and assigned to a duty station, verifiable by a copy of the orders, will be allowed to withdraw and receive a 100% refund of tuition, provided courses have not been completed.

Requests for a total withdrawal from a college or courses for one of the above reasons may result in a partial prorated refund of tuition, provided courses have not been completed. All decisions made at the college are final.

Limitation: Never attending is not an allowable refund exception or an excuse of the debt incurred through registration.

STUDENT FINANCIAL ASSISTANCE (AR 2.2.11 & Appendix S-5)

The Maricopa Community Colleges provide students financial assistance to enable access to higher education. Student financial assistance shall be awarded on the basis of demonstrated financial need except where funds are specified for recognition of special talents and achievements. Additional procedural information on financial assistance is available in Appendix S-5.

Appendix S-5: Student Financial Assistance

The Maricopa Community Colleges provide students financial assistance to enable access to higher education. Student financial assistance shall be awarded on the basis of demonstrated financial need except where funds are specified for recognition of special talents and achievements. Only those with a lawful presence in the United States may qualify for federal financial aid or Maricopa County Community College District (MCCCD) scholarships. Under Arizona law, any information the student provides about his or her legal status when applying for financial aid or publicly funded scholarships may be subject to mandatory reporting to federal immigration authorities. This does not apply to applications for the private scholarship funds held in and distributed by the Maricopa Community Colleges Foundation.

How to Apply for Federal Financial Aid

New students must complete the Free Application for Federal Student Aid (FAFSA) or FAFSA on the Web at **http://www.fafsa.ed.gov/**. Each academic year, continuing students must reapply by completing a FAFSA, Renewal FAFSA, or FAFSA on the Web. Scholarships require separate applications. Specific information regarding financial assistance, including application deadlines or priority dates, may be obtained from the college Office of Student Financial Aid.

Types of Aid

Grants, loans, student employment, and scholarship funds may be available from federal, state, and/or private sources. The Maricopa Community Colleges Foundation offers a variety of scholarship opportunities. Scholarship opportunities are available year round. However, most scholarships are posted mid-January and most deadlines are the last week of March. Options are available at www.maricopa.edu/resdev/scholarships/apply.php or by calling 480-731-8400.

Distribution of Aid

Criteria by which aid is distributed among eligible financial aid applicants are available on request at the college Office of Student Financial Aid.

Rights and Responsibilities

Students should read all information provided in the process of applying for federal financial aid in order to gain a greater knowledge of all the rights as well as responsibilities involved in receiving that assistance.

Satisfactory Academic Progress

Specific requirements for academic progress for financial aid recipients are applied differently than scholastic standards. In addition to scholastic standards which are explained elsewhere in this catalog, financial aid recipients are also subject to the following Standards of Satisfactory Academic Progress. Specific information is available at the college Office of Student Financial Aid.

Maricopa Community Colleges Standards of Satisfactory Academic Progress (SAP) for Financial Aid Eligibility

Federal regulations (CFR 668.32(F) and 668.34) require a student to move toward the completion of a degree or certificate within an eligible program when receiving financial aid. Specific requirements for academic progress for financial aid recipients are applied differently than scholastic standards. Federal regulations state that academic progress standards must include a review of all periods of enrollment, regardless of whether or not aid was received. Students will be evaluated using the standards described below. Failure to meet any of these minimum standards will result in loss of Title IV, HEA Program (federal financial aid) eligibility.

Evaluation Period

Standards of Satisfactory Academic Progress (SAP) will be evaluated at the end of each semester; fall, spring and summer. Programs less than one year in length will be evaluated at the midpoint of the program. Non-standard sessions will be evaluated at the completion of the session.

Standards of Satisfactory Academic Progress

Standards of Satisfactory Academic Progress (SAP) are evaluated on each of the three measurements outlined below. Failure to meet any of these standards will result in suspension of eligibility for financial aid.
Note: Grades of F,I,N,W,X,Y,Z, and courses not yet graded are considered attempted but not meeting progress standards for the purposes of financial aid.

- **Grade Point Measurement**
  Students must meet the following credit hour/cumulative grade point average (CGPA).

TOTAL CREDITS ATTEMPTED*	MIN CGPA
< 15.75	1.60
16-30.75	1.75
31-45.75	1.90
46 +	2.00

For which grade points are computed

- **Semester Progress Measurement**
  Students must successfully complete 2/3 (66.67%) of all attempted course work during the semester.
- **Maximum Time Frame Measurement**
  Students who have attempted more than 150% of the published credits required for their program of study are considered not meeting SAP.

Coursework Treatment in SAP Calculation
Course work taken during the semester also included in the evaluation:
- Courses funded through a consortium agreement
- All attempted remedial credits
- Repeated course work

Course work included in the maximum time frame evaluation:
- All of those included in the semester evaluation
- All evaluated transfer credits
- Any associates degree or higher earned will be considered to have exhausted maximum timeframe eligibility

Course work not included in SAP evaluation:
- Audited courses
- Non-credit courses
- Credit by examination
- Credit for prior learning option (as outlined in the college general catalog)
- Academic renewal

Ineligibility Determination Appeal
Any student who has lost financial aid eligibility due to extenuating circumstances may appeal. Appeal must:
- Be in writing and submitted to the Financial Aid Office where the student is applying for aid.
- Include the extenuating circumstances that caused the student not to meet SAP standards.
- Include appropriate supporting documentation.
- Include how that condition or situation has been resolved thus allowing the student the ability to meet SAP standards.

Students will be notified of the results of their appeal and any restrictions or conditions pertaining to their appeal. The outcome of an appeal may include a probationary term or denial.

Failure to successfully complete all conditions during the probationary period (as defined in the academic plan) will result in loss of financial aid eligibility.

Regaining Eligibility
A student who has lost financial aid eligibility may only regain eligibility by meeting the minimum sap standards. Course work taken at other colleges will not be considered for reinstatement purposes.

Terminology and Information Pertaining to this Policy
- **Summer Sessions** – Enrollment in any or all summer sessions within the same calendar year will be considered one term.
- **Non-Standard Session** – Sessions that do not follow the traditional start and end dates for the semester.
- **Attempted Credit** – Any credit for which a grade of A, B, C, D, F, I, IP, P, W, X, Y, OR Z is received.
- **Appeal** – "A process by which a student who is not meeting the institution's satisfactory academic progress standards petitions the institution for reconsideration of the student's eligibility for Title IV, HEA Program assistance."
- **Extenuating Circumstance** – Examples are: personal injury or illness, serious illness or death within the immediate family, or other circumstance beyond the reasonable control of the student.
- **Supporting Documentation** – Examples could include: an obituary notice, divorce decree, an accident report, or a letter from a physician, attorney, social services agency, etc.
- **Financial Aid Warning** – "A status assigned to a student who fails to make satisfactory academic progress at an institution that evaluates academic progress at the end of each payment period" (semester).
- **Financial Aid Probation** – "A status assigned by an institution to a student who fails to make satisfactory academic progress and who has appealed and has had eligibility for aid reinstated." A student in this status "may not receive Title IV, HEA Program funds for the subsequent payment period unless the student makes satisfactory academic progress or the institution determines that the student met the requirements specified by the institution in the academic plan for the student."
- **Academic Plan** – A plan developed through the SAP appeal process which will lead a student to qualify for further Title IV, HEA Program funds.
- **Financial Aid Suspension** – The status assigned upon failing to meet the minimum SAP standards or the terms of a probationary status. Students in this status are not eligible to receive Title IV, HEA assistance.

For more information, please contact the college Financial Aid Office.

Refunds and Repayments
In accordance with federal regulations (CFR 668.22), a student may be required to repay federal financial aid funds if they completely withdraw, are withdrawn, or fail to earn a passing grade from all classes during a semester. Further information is available at the college Office of Student Financial Aid. This could affect a student's ability to receive Financial Aid in the future at any school. For a student receiving Financial Aid, also see Appendix S-7 for Withdrawal procedures.

Award Amount and Level of Enrollment
Award amount is determined, in part, on the level of enrollment. Federal student aid recipients are advised to register at the same time for all classes they intend to take during a semester to maximize award. Some federal aid may not be awarded for classes added at a later date. Contact the college Office of Student Financial Aid for more information.
If you are receiving federal financial aid it is important to read the information below prior to making a decision to withdraw.

Treatment of Title IV Aid when a Student Withdraws
The law specifies how your school must determine the amount of Title IV program assistance that you earn if you withdraw from school. The Title IV programs that are covered by this law are: Federal Pell Grants, Academic Competitiveness Grants, National SMART grants, TEACH Grants, Stafford Loans, PLUS Loans, Federal Supplemental Educational Opportunity Grants (FSEOGs), and Federal Perkins Loans.

When you withdraw during your payment period or period of enrollment (you may contact the Financial Aid office to define these for you and tell you which one applies) the amount of Title IV program assistance that you have earned up to that point is determined by a specific formula. If you received (or your school or parent received on your behalf) less

assistance than the amount that you earned, you may be able to receive those additional funds. If you received more assistance than you earned, the excess funds must be returned by the school and/or you.

The amount of assistance that you have earned is determined on a pro-rata basis. For example, if you completed 30% of your payment period or period of enrollment, you earn 30% of the assistance you were originally scheduled to receive. Once you have completed more than 60% of the payment period or period of enrollment, you earn all the assistance that you were scheduled to receive for that period.

If you did not receive all of the funds that you earned, you may be due a post-withdrawal disbursement. If your post-withdrawal disbursement includes loan funds, your school must get your permission before it can disburse them. You may choose to decline some or all of the loan funds so that you don't incur additional debt. Your school may automatically use all or a portion of your post-withdrawal disbursement of grant funds for tuition, fees, and room and board charges (as contracted with the school). The school needs your permission to use the post-withdrawal grant disbursement for all other school charges. If you do not give your permission, you will be offered the funds. However, it may be in your best interest to allow the school to keep the funds to reduce your debt at the school.

There are some Title IV funds that you were scheduled to receive that cannot be disbursed to you once you withdraw because of other eligibility requirements. For example, if you are a first-time, first-year undergraduate student and you have not completed the first 30 days of your program before you withdraw, you will not receive any FFEL or Direct loan funds that you would have received had you remained enrolled past the 30th day.

If you receive (or your school or parent receives on your behalf) excess Title IV program funds that must be returned, your school must return a portion of the excess equal to the lesser of:

1. Your institutional charges multiplied by the unearned percentage of your funds, **OR**
2. The entire amount of excess funds. The school must return this amount even if it didn't keep this amount of your Title IV program funds.

If your school is not required to return all of the excess funds, you must return the remaining amount. Any loan funds that you must return, you (or your parent for a PLUS Loan) repay in accordance with the terms of the promissory note. That is, you make scheduled payments to the holder of the loan over a period of time. Any amount of unearned grant funds that you must return is called an overpayment. The maximum amount of a grant overpayment that you must repay is half of the grant funds you received or were scheduled to receive. You must make arrangements with your school or the Department of Education to return the unearned grant funds.

The requirements for Title IV program funds when you withdraw are separate from any refund policy that your school may have. Therefore, you may still owe funds to the school to cover unpaid institutional charges. Your school may also charge you for any Title IV program funds that the school was required to return. You can view the tuition refund policy and requirements and procedures for withdrawing from school at:
www.maricopa.edu/publicstewardship/governance/adminregs/students/2_2.php

VETERANS SERVICES (AR 2.9)

The Maricopa Community Colleges' veterans' services offices act as liaisons with the Department of Veterans Affairs. Each program must be approved by the State of Arizona Department of Veterans' Services. Students may be eligible to receive educational benefits if they are registered in courses that apply to the student's approved programs. Application forms, counseling, advisement and tutoring are available for students who are eligible for veteran's educational benefits. Students applying for veteran's educational benefits should allow eight to ten weeks before receiving benefits. The amount of benefits awarded is determined by the Department of Veterans Affairs, and is based on the number of credit hours or clock hours for which a student is enrolled and the length of the enrollment period for each course.

Veteran's benefits available:
- Chapter 30 - Montgomery GI Bill
- Chapter 31 - Vocational Rehabilitation (separately served through the local VA office)
- Chapter 32 - VEAP Program
- Chapter 35 - Survivors and dependents of deceased/100% disabled veterans
- Chapter 1606 - Montgomery GI Bill, Selected Reserve

It is the student's responsibility to notify the office that serves veterans at their campus regarding any change in enrollment, address, program of study, enrollment at another institution, or any other change that may impact their veteran's educational benefits.

Those students receiving benefits must follow the VA academic progress policy to continue to receive benefits.

Academic Progress Policy for Students Receiving Veteran's Educational Benefits

Credit Hours for Which Grade Points are Computed at Resident Maricopa Community College (A, B, C, D, F, and Y)	Minimum Grade Point Average Required
12-15	1.60
16-30	1.75
31-45	1.90
46 +	2.00

Department of Veterans Affairs regulations require that all persons using any type of veteran educational assistance program be making satisfactory academic progress toward achievement of their educational objective (program of study). A student who does not meet the minimum standards (see above) will be placed on probation for a maximum of two (2) consecutive semesters. At this point, if satisfactory academic progress has not been demonstrated, veteran educational benefits will be terminated. Benefits may be resumed when the student raises the cumulative grade point average to the required minimum standards or demonstrates the ability to meet these standards through the approval of a written appeal. For appeal procedures, contact the office that serves veterans at your campus.

For additional details and information regarding veteran's educational benefits, contact the office that serves veterans at your campus.

Scholastic Standards

ACADEMIC LOAD (AR 2.3.1)

Students carrying at least twelve (12) credit hours will be considered full-time students for the fall and spring semesters. Three-quarter-time is 9 - 11.9 credit hours. Half-time is 6 - 8.9 credit hours. Fewer than six (6) credit hours is considered less than half-time. Academic load for summer and special terms may be defined differently. Contact the Admissions and Records Office/Office of Student Enrollment Services for clarification. As provided in the Reduced Course Load administrative regulation, a student may be deemed a full-time student carrying fewer than twelve credit hours pursuant to an accommodation of a disability.

Courses may vary in length, and begin and end throughout the year. A credit hour indicates the value of an academic credit. Standards for the awarding of credit hours may be time based or competency based. To obtain credit, a student must be properly registered and must pay fees for the course. The fall and spring semesters are typically sixteen (16) weeks in length. Summer sessions are typically five or eight weeks in length.

Students desiring to take more than eighteen (18) credit hours must obtain approval from the designated college official. Ordinarily, only students with a grade point average of 3.0 or higher for the preceding semester or first semester students who were in the upper quarter of their high school graduating class are permitted to carry more than eighteen (18) credit hours.

Students participating in extra-curricular or co-curricular activities or receiving financial assistance may be required to maintain a specified minimum academic load.

Students who are working, have considerable extra-curricular or co-curricular activities, or have been reinstated from academic suspension/probation should plan their academic load accordingly.

Schedule Changes

Students may change their schedule by following the designated procedures at their college of enrollment. It is the student's responsibility to notify the college if he/she will no longer be attending the class (see Appendix S-7 for Withdrawal Procedures).

ATTENDANCE (AR 2.3.2)

- Only persons who are registered for a class at any of the Maricopa Community Colleges may attend that class. Attendance requirements are determined by the course instructor. Students who do not meet the attendance requirement as determined by the course instructor may be withdrawn.
- Students who fail to attend the first scheduled class meeting, or to contact the instructor regarding absence before the first scheduled class meeting may, at the option of the instructor, be withdrawn.
- At the beginning of each course, each faculty member will provide students with written attendance requirements. It is the student's responsibility to consult with the instructor regarding official or unofficial absences. Absences begin to accumulate with the first scheduled class meeting.
- Students bear the responsibility of notifying the Admissions and Records Office/Office of Student Enrollment Services when they discontinue studies in a course or at the college. Please refer to Appendix S-7 for Withdrawal Procedures.

I. Official Absences
   A. Official absences are those that occur when students are involved in an official activity of the college, i.e., field trips, tournaments, athletic events, and present an official absence excuse form. Absences for such events shall not count against the number of absences allowed by an instructor or department. Students who must miss a class for an official reason must obtain an official absence verification card from the appropriate vice president or designee and present it to the appropriate instructor(s) before the absence. Prior arrangements must be made with each instructor for make-up work. If prior arrangements have been made, the student will not be penalized.
   B. Other official absences include jury duty and subpoenas. Appropriate documentation will be required. Prior arrangements must be made with each instructor for makeup work. If prior arrangements have been made, the student will not be penalized.
   C. In the event of military commitments. Absences for periods of up to one week will not be counted against the number of absences allowed by an instructor or department. The student is required to provide appropriate documentation of the specific orders, length of assignment and location. Prior notification must be initiated with each instructor to discuss make-up work. If the length of the absence will be longer than one week, the instructor and the student will determine whether there is sufficient opportunity for the student to make up the work. If it is determined that the length of absence for the military commitment provides an undue hardship on the student's ability to make up the assignments, he or she will be provided an opportunity to request an incomplete grade or drop the class or, in the case of open-entry classes, the opportunity to request an extension.
   D. In the event of the death of an immediate family member, absences for periods of up to one week will not be counted against the number of absences allowed by an instructor or department. Students should contact instructor(s) as soon as possible to arrange for make-up work. Appropriate documentation will be required (for example, a copy of the obituary or funeral program). In specialized programs that require clinical rotations, this regulation may not apply.

II. Religious Holidays
   Students shall have the right to observe major religious holidays without penalty or reprisal by any administrator, faculty member or employee of the Maricopa Community Colleges. Absences for such holidays shall not count against the number of absences allowed by an instructor or department. At least one week before the holiday, students shall submit to their instructor(s) a written statement that includes both the date of the holiday and the reason why class attendance is impossible. Prior arrangements must be made with each instructor for make-up work. If prior arrangements have been made, the student will not be penalized.

GRADING (AR 2.3.3)

I. **Policy**

It is the policy of the Maricopa Community Colleges that a grade will be assigned at the conclusion of the course. Official grades are available on designated college web sites.

Grade Key

A	Excellent	4 grade points per credit hour
B	Above Average	3 grade points per credit hour
C	Average	2 grade points per credit hour
D	Passing	1 grade point per credit hour
F	Failure	0 grade points per credit hour
I	Incomplete	Not computed in grade point average
IP	Course in Progress	Not computed in grade point average
N	Audit	Not computed in grade point average
P*	Credit	Not computed in grade point average
W	Withdrawn, passing	Not computed in grade point average
Y	Withdrawn, failing	0 grade points per credit hour
Z	No Credit	Not computed in grade point average

*A "P" is judged to be equivalent to a grade of C or higher.

II. **Incomplete Grade**

A. Students who are doing acceptable work may request an incomplete grade "I" if they are unable to complete the course requirements by the end of the term because of illness or other extenuating circumstances. If the request is approved by the instructor, he or she shall define, in a written/electronic contract, how the course will be completed.

B. Students must complete the requirements within the time period agreed to—maximum time allowed is seven (7) months from the last date of class in which the grade of incomplete was assigned. Students who do not complete the requirements within seven (7) months will have their grade recorded in accordance with the written contract. Students should NOT reregister for the course to complete the contract.

III. **Repeating a Course/Improving a Grade**

To improve a previously earned grade, students may repeat the course up to three times after the initial attempt to improve a grade. (A "W" or "Y" is not considered an attempt.) Students planning to repeat a course should seek advisement prior to enrolling. The lower grade(s) for repeated courses will automatically be excluded from the grade point calculation. All enrollments in a course will appear on the transcript. Check individual courses and programs for exceptions.

IV. **Credit/No Credit Courses (P/Z)**

A. Some courses may be taken under a credit/no credit grading system. These courses carry grades of P (credit, equivalent to a grade of C or higher) or Z (no credit) and are not computed in the student's grade point average. Credits earned with a grade of P may be counted toward graduation with the exception of AGEC (Arizona General Education Curriculum).

B. The prescribed time limits are for full-semester classes. Time limits for classes which meet fewer than sixteen (16) weeks are adjusted accordingly. See "Important Deadlines for Students".

C. In courses with credit/no credit (P/Z) grading, the student may request standard grading (A, B, C, D, F), within fourteen (14) days including the date of the first class meeting. The instructor must immediately notify the Admissions and Records Office/Office of Student Enrollment Services.

D. In courses with standard grading (A, B, C, D, F), the instructor determines if the credit/no credit option is available. If the option is available, the student must obtain the permission of the instructor. The instructor must notify the Admissions and Records Office/Office of Student Enrollment Services within fourteen (14) days including the day of the first class meeting.

E. It is the student's responsibility to verify the transferability of credit/no credit courses. Some universities place a limitation on the number of credit/no credit courses that can be transferred.

Advisory note: Some institutions outside the Maricopa Community Colleges may translate the Z grade as failing.

V. **Audit Courses**

A. Auditors are those who enroll in a course for the sole purpose of obtaining information; they receive no credit, grades, homework, or tests. If an auditor wishes to earn credit, he or she must change from audit status to credit status within the first week. If a student wishes to audit a course for which he or she is enrolled for credit, the change must be made within the first five (5) weeks of a semester. Auditors are subject to the same attendance policies as other students and must meet the same prerequisite requirements or obtain approval of the instructor. See the fee schedule for charges. Financial aid is not available for audited courses.

B. The prescribed time limits are for full-semester classes. Time limits for classes which meet fewer than sixteen (16) weeks are adjusted accordingly and appear in the "Important Deadlines for Students."

VI. Important Deadlines for Students

Class Length	Deadline for Students to Withdraw with Guaranteed Grade of W	Deadline for Students to Withdraw From a Course (Instructor Signature Required)	Deadline for Students to Request Complete Withdrawal	Deadline to Change Type of Grading (A-F to P/Z, or P/Z to A-F)	Deadline to Change from Audit Grade to Credit Grade	Deadline to Change from Credit Grade to Audit Grade
One Week or less (1 to 7 days)	1st Day of Class	1st Day of Class or Prior to the Last Day of Class	1st Day of Class or Prior to the Last Day of Class	1st Day of Class	1st Day of Class	1st Day of Class
Two Weeks (8 to 14 days)	3rd Calendar Day	6th Calendar Day	6th Calendar Day	1st Day of Class	1st Day of Class	3rd Calendar Day
Three Weeks (15 to 21 Days)	6th Calendar Day	12th Calendar Day	12th Calendar Day	2nd Calendar Day	1st Day of Class	5th Calendar Day
Four Weeks (22 to 28 days)	9th Calendar Day	17th Calendar Day	17th Calendar Day	3rd Calendar Day	2nd Calendar Day	7th Calendar Day
Five Weeks (29 to 35 days)	12th Calendar Day	23rd Calendar Day	23rd Calendar Day	4th Calendar Day	2nd Calendar Day	9th Calendar Day
Six Weeks (36 to 42 days)	14th Calendar Day	29th Calendar Day	29th Calendar Day	5th Calendar Day	3rd Calendar Day	11th Calendar Day
Seven Weeks (43 to 49 days)	17th Calendar Day	35th Calendar Day	35th Calendar Day	5th Calendar Day	3rd Calendar Day	12th Calendar Day
Eight Weeks (50 to 56 days)	20th Calendar Day	41st Calendar Day	41st Calendar Day	6th Calendar Day	3rd Calendar Day	15th Calendar Day
Nine Weeks (57 to 63 days)	23rd Calendar Day	46th Calendar Day	46th Calendar Day	7th Calendar Day	4th Calendar Day	17th Calendar Day
Ten Weeks (64 to 70 days)	26th Calendar Day	52nd Calendar Day	52nd Calendar Day	8th Calendar Day	4th Calendar Day	19th Calendar Day
Eleven Weeks (71 to 77 days)	29th Calendar Day	58th Calendar Day	58th Calendar Day	9th Calendar Day	5th Calendar Day	21st Calendar Day
Twelve Weeks (78 to 84 days)	32nd Calendar Day	63rd Calendar Day	63rd Calendar Day	10th Calendar Day	5th Calendar Day	23rd Calendar Day
Thirteen Weeks (85 to 91 days)	35th Calendar Day	70th Calendar Day	70th Calendar Day	10th Calendar Day	5th Calendar Day	25th Calendar Day
Fourteen Weeks (92 to 98 days)	38th Calendar Day	76th Calendar Day	76th Calendar Day	11th Calendar Day	6th Calendar Day	27th Calendar Day
Fifteen Weeks (99 to 105 days)	41st Calendar Day	82nd Calendar Day	82nd Calendar Day	12th Calendar Day	6th Calendar Day	28th Calendar Day
Sixteen Weeks or more (106 or more days)	End of the seventh week	Two weeks before the last class period	Two weeks before the last class period	Within 14 days including the first class period	Within first week of class	Within first five weeks

Deadlines are based on calendar days and begin with the first day of class.
Deadlines that fall on a weekend or holiday advance to the next college work day.

ACADEMIC PROBATION (PROGRESS) (AR 2.3.4)

I.   **Probation**

A student will be placed on academic probation if, after completion of twelve (12) or more credit hours, the student's cumulative grade point average is less than:

Credit Hours for Which Grade Points are Computed at Resident Maricopa Community College (A,B,C,D,F, and Y)	Minimum Grade Point Average Required
12-15	1.60
16-30	1.75
31-45	1.90
46+	2.00

(Students should also be aware that graduation requires a cumulative minimum grade point average of 2.00)

Students on academic probation may take no more than twelve (12) credit hours per semester unless approved by the Admissions and Standards Committee.

II.   **Continued Probation**

A student on academic probation who fails to raise the cumulative grade point average to the required minimum standards (see above) will be placed on continued probation and may be limited to taking six (6) credit hours. Regulations regarding continued probation do not apply to the summer session. Credit hours earned in summer sessions will be included in the cumulative grade point average.

INSTRUCTIONAL GRIEVANCE PROCESS (AR 2.3.5 & Appendix S-6)

A student who feels that he or she has been treated unfairly or unjustly by a faculty member with regard to an academic process such as grading, testing, or assignments, has the right to appeal according to the approved procedures.

The appeal process for grades expires one year from the date the grade was issued. Steps outlining the process are available in Appendix S-6

Appendix S-6: Instructional Grievance Process

A student who feels that he/she has been treated unfairly or unjustly by a faculty member (full-time or part-time) with regard to an academic process such as grading, testing or assignments, should discuss the issue first with the faculty member involved. This conference should be requested by the student within fifteen (15) working days from the time the student knew or reasonably should have known about the unfair or unjust treatment.

This instructional grievance process should not be utilized in a case in which a student feels he/she has experienced discrimination. If the student feels that he/she has experienced discrimination on the basis of race, color, religion, national origin, gender, age, disability, veteran status, or sexual orientation, the student should refer to the Discrimination Complaint Procedures for Students as administered by the Vice President for Student Affairs.

Steps for students to follow:

1. If, within ten (10) working days of the request for the conference with faculty member, the problem is not resolved or the faculty member has been unable to meet with the student, the student may continue the process by filing a written complaint with the Department/Division Chairperson and appropriate administrative officer at the college/center. This written complaint must be filed within ten working days following the previous deadline. The written complaint will be given to the faculty member five days before any official meetings are convened.

2. Upon receipt of a written complaint, the Department/Division Chair or appropriate college administrative officer will work with the parties in an attempt to resolve the conflict. The faculty may ask that the College Faculty Senate President be in attendance. Every attempt will be made to maintain confidentiality during this process. A faculty member will not be required to respond to a complaint which is not in writing and which, when appropriate, did not have specific documentation including dates, times, materials, etc. The written complaint will be made available to the faculty member.

3. If the grievance is not resolved at this level within ten working days, the student should forward to vice president of academic affairs or designee, a copy of the original written complaint with an explanation regarding action taken at each prior level. The dean of instruction or appropriate college/ center administrative officer will meet with the student, faculty member, the College Faculty Senate President if requested by the faculty member, and Department/Division Chair and attempt to resolve the issues. This level will be the final step in any grievance process regarding grades.

4. If the grievance, other than those concerning grades, is not resolved by the vice president of academic affairs or designee, it may be forwarded in writing by the student to the college president for final resolution. The college president or designee will issue a final written determination in the grievance process.

Note: The appeal process for grades expires one year from the date the grade was issued.

WITHDRAWAL (AR 2.3.6)

To withdraw from a course or courses from the college, students must follow approved procedures (See Appendix S-7). The Office of Admissions and Records provides information about the withdrawal process. The official date of withdrawal is the date the withdrawal is received in the Admissions and Records Office/Office of Student Enrollment Services.

Never attending is not an allowable refund exception or an excuse of the debt incurred through registration. Please see the refund policy.

STUDENT AND FACULTY WITHDRAWAL PROCEDURES (Appendix S-7)

Student Withdrawal Procedures

I.   **Withdrawal from Specific Courses**

A student may officially withdraw from specific courses in the following ways:

    A.   Through the 7th week*, a student may initiate an official withdrawal from any course by completing the withdrawal process online using the student self service system or by submitting a course withdrawal form to the Admissions and Records Office/Office of Student Enrollment Services in accordance with the published deadlines. A grade of W (withdrawn, passing – not computed in the grade point average) will be assigned.

B. After the 7th week*, a student must initiate a withdrawal request with the faculty member. If, after consultation with the student, the faculty member approves the request, a grade of W (withdrawn, passing – not computed in the grade point average) or Y (withdrawn, failing – computed in the grade point average as a failing grade) will be assigned. If the request is not approved, the student will remain in the course.

C. A student has the right to appeal a withdrawal decision according to the approved procedures. Steps outlining the process are available in Appendix S-6.

*The prescribed time limits are for full semester classes. Time limits for classes which meet fewer than sixteen (16) weeks are adjusted accordingly. See Important Deadlines for Students. Failure to file an official withdrawal form may result in failing grades and responsibility for course tuition and fees. Refunds will only be processed within the refund period.

II. Complete Withdrawal from College

Students electing to withdraw from the college must contact the Admissions and Records Office/Office of Enrollment Services no later than two weeks* before the end of the last class meeting and may be required to file a written request.

A grade of W will be assigned in all courses for students who withdraw by the end of the 7th week* of classes. Withdrawals completed after this time will result in a grade of W (withdrawn, passing – not computed in the grade point average) or Y (withdrawn, failing – computed in the GPA as a failing grade).

*The prescribed time limits are for full semester classes. Time limits for classes which meet fewer than sixteen (16) weeks are adjusted accordingly. See Important Deadlines for Students. Failure to file an official withdrawal form may result in failing grades and responsibility for course tuition and fees. Refunds will only be processed within the refund period.

III. Withdrawal of Financial Aid Students

In accordance with federal regulations (34CFR 668.22), a student may be required to repay federal financial aid funds if they completely withdraw or are withdrawn, or fail to earn a passing grade from all classes during a semester. Further information is available at the college Office of Student Financial Aid. This could affect a student's ability to receive Financial Aid in the future at any school.

Faculty Withdrawal Procedures (Appendix S-7)

A faculty member has the option of withdrawing a student who has accumulated unofficial absences in excess of the number of times indicated in that faculty member's attendance policy in the course syllabus (see AR 2.3.2). Students withdrawn for excessive absences may be reinstated only with the approval of the faculty member. A grade of W will be assigned through the 7th week*. After the 7th week*, a grade of W or Y will be assigned. Faculty members electing to withdraw students must record the withdrawal through the online system, including last date of attendance and withdrawal code.

*The prescribed time limits are for full semester classes. Time limits for classes which meet fewer than sixteen (16) weeks are adjusted accordingly. See Important Deadlines for Students. Failure to file an official withdrawal form may result in failing grades and responsibility for course tuition and fees. Refunds will only be processed within the refund period.

ACADEMIC RENEWAL (AR 2.3.7)

Students who are returning to this college after a separation of five (5) years or more from the Maricopa Community College District, may petition for academic renewal. The request must be in writing and submitted to the Admissions and Records Office/Office of Student Enrollment Services at the college where the grades were earned.

Academic renewal at one of the Maricopa Community Colleges does not guarantee that colleges outside the Maricopa Colleges will accept this action. Acceptance of academic renewal is at the discretion of the receiving institution.

1. Prior to petitioning for academic renewal, the student must demonstrate a renewed academic performance by earning a minimum of twelve (12) credit hours and a cumulative grade point average of 2.5 or higher within Maricopa Colleges after reenrollment.
2. Upon approval, all courses taken prior to reenrollment with a grade of "A," "B," "C," "D," "F," and "Y" will be annotated as academic renewal on the student's permanent record. All course work affected by academic renewal will not be computed in the grade point average. Courses with grades "A," "B," or "C" will have the associated credit hours counted in the total credit hours earned. Such credit will not be computed in the grade point average.
3. All course work will remain on the student's permanent academic record, ensuring a true and accurate academic history.
4. The academic renewal policy may be used only once at each college and cannot be revoked once approved.
5. Students who have been granted Academic Renewal must also meet the Financial Aid Standards of Academic Progress if they wish to receive financial aid.

HONORS PROGRAM (AR 2.3.8)

Each of the Maricopa Community Colleges has an honors program. Interested students should contact the college honors coordinator for information about the program and available scholarships, including the Chancellor's, Foundation's, and President's Scholarships.

President's Honor List

The President's Honor List for each college consists of all students who complete twelve (12) or more credit hours in residence in courses numbered 100 or higher in a given semester with a college semester grade point average of 3.75 or higher.

GRADUATION

GENERAL GRADUATION REQUIREMENTS (AR 2.3.9)

All students are required to complete the degree and/or certificate requirements as approved by the MCCCD Governing Board. The college reserves the right to make necessary course and program changes in order to meet current educational standards. In addition, students must:

1. Be credited in the Admissions and Records Office/Office of Student Enrollment with not fewer than: 60 semester credit units in courses numbered 100 or above for the Associate in Arts degree, Associate in Science degree, Associate in Transfer Partnership degree, and Associate in General Studies degree; 60 semester credit units for the Associate in Applied Science degree; 62 semester credits for the Associate in Business degrees. For specific certificate programs, be credited with not fewer than the minimum total of credit units required for the certificate program. Students not continuously enrolled, as outlined in the Catalog Under Which a Student Graduates policy, must satisfy current graduation requirements.

2. Have earned a minimum of 12 semester credit units toward the degree or certificate at the district college granting the degree or certificate. The 12 hours in the AAS degree curricula may be in the Required Courses area and/or Restricted Electives courses. Courses from the General Education Core and Distribution area are excluded. In cases where the certificate requires fewer than 12 credit units, a minimum of six credit units must be completed at the college awarding the certificate. The minimum of six credit hours in the certificate or degree curricula may be in the Required Courses area and/or the Restricted Electives. Courses from the General Education Core and Distribution areas are excluded. Shared Programs are programs offered at multiple colleges but not available at all colleges. The requirements are identical at all the colleges offering the program. A shared program requires a minimum of six credit hours from the total program requirements to be completed with a grade of "C" or better at the college awarding the certificate or degree. The exception is the Nursing program. For those shared programs with less than six credit hours, the total hours for the program must be completed at the college awarding the certificate.

3. Have filed an application for the degree or certificate with the Admissions and Records Office/Office of Student Enrollment Services on the date determined by the college/center. Students must apply for graduation from the college where they have successfully completed Block 4 of the Associate in Applied Science in Nursing.

4. Have a minimum cumulative grade point average of 2.000 at the college granting the degree.

5. Have a minimum cumulative grade point average of 2.000 in all courses used to fulfill degree requirements. Some specific programs have higher grade requirements. It is the student's responsibility to be aware of these program requirements.

6. Have removed, thirty (30) days after the anticipated graduation date, all deficiencies on the record to use those courses toward program completion.

7. Have removed any indebtedness to any MCCCD college /center.

8. Have paid required degree or certificate application fee.

See fee schedule for charges.
See Graduation with Honors for information on honors designation

Certificates/Degrees

The Maricopa Community Colleges offer Certificates of Completion as well as Associate Degrees, one of which is conferred on each student who has completed a program of study. These certificates and degrees are as follows: (1) Certificate of Completion (Career Program Specified); (2) Academic Certificate; (3) General Education Certificate; (4) Associate in Arts; (5) Associate in Science; (6) Associate in Business; (7) Associate in General Studies; (8) Associate in Transfer Partnership; (9) Associate in Applied Science (Career Program Specified).

All candidates for a degree and/or certificate must complete the General Graduation Requirements as approved by the MCCCD Governing Board.

All students are urged to meet with a faculty advisor, program advisor or counselor as soon as possible to determine which program meets their needs and to plan their course of study.

Licensure Disclaimer

Maricopa Community Colleges courses and programs prepare students for entry into a variety of professions. Many of these professions require that a person hold an occupational license or certificate in order to work in a particular field. Typically, a person must meet certain legal requirements before obtaining such a license or certificate. These requirements are established by county, state or federal agencies, and often are based on a person's character, or whether the person has been convicted of a criminal offense. It is possible for a student who has obtained a degree or certificate from a community college to be denied the right to work in a particular profession after completing the degree or certificate because of concerns over the student's character or criminal background. Any student preparing to enter a field for which a professional license or certificate is required is strongly advised to consult with the appropriate government agency that issues such credentials. That agency can provide the student complete information about any requirements the law imposes for working in a particular occupation.

MCCCD General Education Statement

The general education core of the program of study for an associate degree or a certificate helps students develop a greater understanding of themselves, of their relationship with others, and of the richly diverse world in which they live. The general education experience provides students with opportunities to explore broad areas of commonly held knowledge and prepares them to contribute to society through personal, social, and professional interactions with others. General education fosters students' personal development by opening them to new directions, perspectives, and processes.

Through its general education requirements, the Maricopa County Community College District is committed to helping students develop qualities and skills that will serve them throughout their lives. General education opportunities encourage students to:

- Build self-awareness, self-respect, and self-confidence
- Recognize and respect the beliefs, traditions, abilities, and customs of all people and all cultures
- Consider the local, global, and environmental impacts of personal, professional, and social decisions and actions
- Access, evaluate, analyze, synthesize, and use information wisely
- Communicate effectively personally, socially, and professionally

- Think critically, make informed decisions, solve problems, and implement decisions
- Consider the ethical implications of their choices
- Value the learning process throughout their lives
- Integrate and connect ideas and events in a historical perspective, and see relationships among the past, the present, and the future
- Develop a personal sense of aesthetics
- Use technological resources appropriately and productively
- Work cooperatively and respectfully with others to serve their communities

The general education experience at MCCCD is composed of specific elements across the curriculum designed to provide the learner with essential knowledge and skills:
- Communication
- Arts and Humanities
- Numeracy
- Scientific Inquiry in the Natural and Social Sciences
- Information Literacy
- Problem-Solving and Critical Thinking
- Cultural Diversity

General Education Designations (example: (FYC), [SB], [HU], etc.)
Effective fall 2000 the course evaluation and/or general education designation as listed in the Arizona CEG (Course Equivalency Guide) within the Arizona Course Applicability System (AZCAS) is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Given that curriculum is dynamic at both MCCCD and the institutions to which MCCCD students transfer, students have the option to petition for general education evaluations and/or general education designations.

The college reserves the right to make necessary course and program changes in order to meet current educational standards.

CATALOG UNDER WHICH A STUDENT GRADUATES (AR 2.2.5)

Students maintaining continuous enrollment at any public Arizona community college or university may graduate according to the requirements of the catalog in effect at the time of initial enrollment or according to the requirements of any single catalog in effect during subsequent terms of continuous enrollment. Students may maintain continuous enrollment whether attending a single public community college or university in Arizona or transferring among public institutions in Arizona while pursuing their degrees.

1. A semester in which a student earns course credit will be counted toward continuous enrollment. Non-credit courses, audited courses, failed courses, or courses from which the student withdraws do not count toward the determination of continuous enrollment for catalog purposes.

EXAMPLE A

Admitted & Earned Course Credit at a Public Community College or University	Fall '05 (Active)
Continued at a Public Community College	Spring '06, Fall '06 (Active)
Transferred to a University	Spring '07 (2005 or Any Subsequent Catalog)

EXAMPLE B

Admitted & Earned Course Credit at a Public Community College or University	Fall '02 (Active)
Enrolled But Earned All Ws, Zs, or Fs	Spring '03 (Inactive)
Enrolled in Audit Courses Only	Fall '03 (Inactive)
Nonattendance	Spring '04 (Inactive)
Transferred to a University	Fall '04 (2004 or Any Subsequent Catalog)

2. Students who do not meet the minimum enrollment standard stipulated in No. 1 during three consecutive semesters (fall/spring) and the intervening summer term* at any public Arizona community college or university are no longer considered continuously enrolled, and must meet requirements of the public Arizona community college or university catalog in effect at the time they are readmitted or of any single catalog in effect during subsequent terms of continuous enrollment after readmission.

EXAMPLE A

Admitted & Earned Course Credit at a Public Community College or University Nonattendance	Fall '02 (Active)
Readmitted & Earned Course Credit at a Public Community College	Spring '03, Fall '03, Spring '04 (Inactive) Fall '04 (Active)
Transferred to a University	Spring '05 (2004 or Any Subsequent Catalog)

EXAMPLE B

Admitted & Earned Course Credit at a Public Community College or University	Fall '02 (Active)
Nonattendance	Spring '03 (Inactive)
Readmitted & Earned Course Credit at a Public Community College	Summer '03 (Active)
Nonattendance	Fall '03, Spring '04 (Inactive)
Transferred to a University	Fall '04 (2002 or Any Subsequent Catalog)

Students are not obligated to enroll and earn course credit during summer terms, but summer enrollment may be used to maintain continuous enrollment status.

3. Students admitted or readmitted to a public Arizona community college or university during a summer term must follow the requirements of the catalog in effect the following fall semester or of any single catalog in effect during subsequent terms of continuous enrollment.

EXAMPLE:

Admitted & Earned Course Credit at a Public Community College or University	Summer ' 04 (Active)
Continued at a Public Community College	Fall '04, Spring '05 (Active)
Nonattendance	Fall '05 (Inactive)
Readmitted & Earned Course Credit at a Public Community College	Spring '06 (Active)
Transferred to a University	Summer '06 (2004 or Any Subsequent Catalog)

4. Students transferring among Arizona public higher education institutions must meet the admission requirements, residency requirements, and all curricular and academic requirements of the degree-granting institution.

TRANSCRIPTS FOR TRANSFER (AR 2.3.10)

The transcript is issued upon written request only. Those students who want to transfer to other institutions of higher education, including other Maricopa Community Colleges, must request their transcript be sent from the Admissions and Records Office/Office of Student Enrollment Services. However, transcripts may be shared within the Maricopa Community College District without the written request of the student in compliance with FERPA.

Official transcripts will not be issued to students having outstanding debts to any of the Maricopa Community Colleges. The release of transcripts is governed by the guidance of the Family Education Rights and Privacy Act of 1974 (see Records Policy in the Student Rights and Responsibilities section of this manual). There is no charge for unofficial transcripts, or for official transcripts sent between Maricopa Community Colleges. See the Tuition and Fee Schedule for charges for other official transcripts.

Arizona General Education Curriculum (AGEC) – A, B, S

Description
The Maricopa County Community College District Arizona General Education Curriculum (MCCCD AGEC) is a 35-38 semester-credit general education certificate that fulfills lower-division general education requirements for students planning to transfer to any Arizona public community college or university. Generally, the MCCCD AGEC transfers as a block without loss of credit.

In most cases, all courses used to satisfy the MCCCD AGEC will apply to graduation requirements of the university major for which the AGEC was designed.

For students planning to pursue an associate degree or transfer to an Arizona public community college or university, the AGEC A is a component of the MCCCD Associate in Arts, the AGEC B is a component of the MCCCD Associate in Business, and the AGEC S is a component of the MCCCD Associate in Science.

Purpose of the AGECs
There are three types of MCCCD AGECs. They are the AGEC A, the AGEC B, and the AGEC S. Designed to articulate with different academic majors, their requirements vary accordingly. Additional information on academic majors at the Arizona public universities can be accessed via the following website: **www.aztransfer.com**
1. The **AGEC A** is designed to satisfy requirements in many liberal arts majors as well as other majors that articulate with the Associate in Arts (e.g., social sciences, fine arts, humanities). AGEC A requires a minimum of college mathematics or college algebra to satisfy the Mathematics [MA] requirement. AGEC A Mathematics requirement is less stringent than the AGEC B and AGEC S. AGEC A and AGEC B Natural Sciences requirements are less stringent than AGEC S.
2. The **AGEC B** is designed to satisfy requirements in business majors that articulate with the Associate in Business. AGEC B requires a minimum of brief calculus to satisfy the Mathematics [MA] requirement.
3. The **AGEC S** is designed to satisfy requirements in majors with more prescriptive mathematics and mathematics-based science requirements. AGEC S articulates with the Associate in Science. AGEC S requires a minimum of the first course in a calculus sequence to satisfy the Mathematics [MA] requirement, and a minimum of eight credits of either university chemistry, university physics or general biology to satisfy the Natural Sciences [SQ/SG] requirement. In addition, students must select six to eight additional credits of math and/or science appropriate to the major.

Academic Policies that Govern the AGEC A, B, S:
- Requires 35-38 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent; A minimum of 60 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better; on an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions;

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC;

- Uses the following policies to help students complete the required Core and Awareness Areas without exceeding the 35-38 semester credits
  1. Courses can satisfy a Core area and one or two Awareness areas simultaneously.
  2. A course cannot be used to satisfy more than one Core area requirement in the AGEC A and B.
  3. A course can be used to satisfy the L and SB or L and HU requirements simultaneously in the Core area for the AGEC S.

- Follows the general education policy below:

General Education Designations (example: (FYC), [SB], [HU], etc.)
Effective fall 2000 the course evaluation and/or the general education designation as listed in the Arizona CEG (Course Equivalency Guide) within the Arizona Course Applicability System (AZCAS) is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Given that curriculum is dynamic at both MCCCD and the institutions to which MCCCD students transfer, students have the option to petition for course evaluations and/or general education designations.
- Require courses that transfer as equivalent courses, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities according to the Arizona CEG (Course Equivalency Guide). The course evaluation and/or general education designation as listed in AZCAS is valid for the term in which the student is awarded credit on the transcript;

- Require that a minimum of 12 semester credits of course work be taken at any of the MCCCD colleges;

- Include both courses and their modular equivalents, either the course or the modular equivalents will satisfy the AGEC;

- Accept one of the courses that is cross-referenced with other courses;

- Provide for exemption from Arizona university admission requirements for: Students who complete the AGEC A, AGEC B, or AGEC S with a minimum 2.5 on a 4.0=A scale, or students who complete an associate or higher degree from a regionally accredited post-secondary institution with a minimum 2.0 on a 4.0=A scale for Arizona residents and a minimum 2.5 on a 4.0=A scale for non-residents.

AGEC Requirements
The 35-38 semester credits required for each of the three AGECs follow. See the list entitled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC A, AGEC B and/or AGEC S for specific course information via the following website: www.maricopa.edu/academic/ccta. The list identifies the courses in alpha-order by prefix as well as the different Core Areas and Awareness Areas where the course will apply.

A. Core Areas: **Credits: 35**

1. **First-Year Composition (FYC)**   **6**

2. **Literacy and Critical Inquiry [L]**   **0-3**
    AGEC A & AGEC B: Select a course that satisfies the [L] requirement (3)
    AGEC S: Select Recommend selecting a course that satisfies (L and SB) or (L and HU), or (L and COM), or (L and CRE101) requirements simultaneously.

3. **Mathematical Studies [MA/CS]**   **4-6**
    The Mathematics [MA] requirement differs for AGEC A, AGEC B, and AGEC S. To complete the Mathematical Studies requirement for AGEC A and AGEC B, select one course to satisfy Mathematics [MA], and a second course from Computer/Statistics/Quantitative Applications [CS]. AGEC S does not require the [CS] area.

    AGEC A requires;
    a. Mathematics [MA] (3 credits) AND
        (Requires a course in college mathematics (MAT142) or college algebra (MAT 150, MAT 151, MAT152) or pre calculus (MAT 187) or any other mathematics course designated with the MA general education value and for which college algebra is a prerequisite.)
    b. Computer/Statistics/Quantitative Applications [CS] (3 credits)

    AGEC B requires;
    a. Mathematics [MA] (3 credits) AND
        (Requires a course in brief calculus (MAT212) or a higher level mathematics course (MAT216, MAT220, or MAT221 or any course for which these courses are prerequisites).
    b. Computer/Statistics/Quantitative Applications [CS] (3 credits)
        CIS105 Survey of Computer Information Systems

    AGEC S requires;
    a. Mathematics [MA] (4 credits) AND
        Requires a calculus course (MAT220 or MAT221) OR any mathematics course for which MAT220 or MAT221 are prerequisites OR if pursuing a degree at ASU in Life Sciences select MAT251 Calculus for Life Science.

4. **Humanities and Fine Arts [HU]**   **6**
    AGEC A and AGEC B: Students are encouraged to choose courses from more than one discipline for a total of six semester credits. AGEC S: Recommend selecting a course that satisfies (L and HU) requirements simultaneously.

5. **Social and Behavioral Sciences [SB]**   **6**
    AGEC A and AGEC B: Students are encouraged to choose courses from more than one discipline for a total of six semester credits. AGEC S: Recommend selecting a course that satisfies (L and SB) requirements simultaneously.

6. **Natural Sciences [SQ/SG]**   **8**
    To complete the Natural Sciences requirement:
    AGEC A and AGEC B require four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of eight

(8) semester credits, OR eight (8) semester credits of [SQ]. Students cannot take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.

The Natural Sciences requirement differs for AGEC S. AGEC S requires eight (8) semester credits of either university chemistry or eight (8) semester credits of university physics or eight (8) semester credits of general biology appropriate to the major.

The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course Applicability System (AZCAS) for information on equivalencies.

7. **Subject Options (Subject based on major) (AGEC S)**   **6-8**
    Students completing AGEC S, through careful selection of courses that meet the other major or pre-requisite requirements for Science degrees, will meet this requirement. Using a transfer guide, select Mathematics courses above Calculus, and/or Science courses from: Astronomy, Biology, Botany, Chemistry, Environmental Science, Geology, Physical Geography, Physics, Zoology.

B. Awareness Areas:
Students must satisfy two Awareness areas: Cultural Diversity in United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five to thirty-eight semester credits to complete any of the three MCCCD AGECs because courses can satisfy a Core area and one or two Awareness areas simultaneously. Therefore, no additional semester credits are required to satisfy the two Awareness areas.
1. Cultural Diversity in the United States [C] AND
2. Global Awareness [G] OR
3. Historical Awareness [H]

AGEC Area Requirements Descriptions/Definitions
CORE AREAS

First-Year Composition (FYC)
Courses must be completed with a grade of "C" or better in the First-Year Composition Core area. Courses must emphasize skills necessary for college-level learning and writing skills.

Literacy and Critical Inquiry [L]
Courses must be completed with a grade of "C" or better in the Literacy and Critical Inquiry Core area. In the [L] course, typically at the sophomore level, students gather, interpret, and evaluate evidence and express their findings in writing or speech. This course includes a series of graded written or spoken formal assignments.

For AGEC S, students will select a course that satisfies both Literacy and Social & Behavioral Sciences or Literacy and Humanities and Fine Arts requirements simultaneously.

Literacy is defined broadly as communicative competence in written and oral discourse; critical inquiry is defined as the gathering, interpreting, and evaluating of evidence. Building on the proficiency attained in

traditional First-Year Composition courses, the Literacy and Critical Inquiry requirement helps students sustain and extend their ability to reason critically and communicate clearly through language.

Mathematical Studies

Courses must be completed with a grade of "C" or better in the Mathematical Studies Core Area. One course must be selected from Mathematics [MA]. In AGEC A and AGEC B, a second course must be selected from Computer/Statistics/Quantitative Applications [CS].

The Mathematical Studies requirement is intended to ensure that students have skill in basic mathematics, can use mathematical analysis in their chosen fields, and can understand how computers make mathematical analysis more powerful and efficient.

First, the acquisition of essential skill in basic mathematics requires the student to complete a course in college algebra or to demonstrate a higher level of skill by completing a course for which college algebra is a prerequisite.

Second, the real-world application of mathematical reasoning requires the student to take a course in statistics or the use of quantitative analysis to solve problems of substance.

Third, the use of the computer to assist in serious analytical work is required. Computers are widely used to study the implications of social decisions or to model physical systems.

Mathematics [MA] AGEC A
The AGEC A Mathematics Core area requires a course in college mathematics, college algebra, pre-calculus, or any other mathematics course for which college algebra is a prerequisite.

Mathematics [MA] AGEC B
The AGEC B Mathematics Core area requires a course in Brief Calculus or a higher level mathematics course.

Mathematics [MA] AGEC S
The AGEC S Mathematics Core area requires the first course in the calculus sequence or any mathematics course for which that course is a prerequisite. MAT251 is required if transferring to a Life Sciences degree at Arizona State University (ASU).

Computer/Statistics/Quantitative Applications [CS]

AGEC A, B [CS] requires: courses that emphasize the use of statistics or other mathematical methods in the interpretation of data and in describing and understanding quantitative relationships, courses that involve the use of computer programming languages or software in the development of skills in analytical thinking.
AGEC B specifies CIS105 as the course that meets the [CS] requirement.

Humanities and Fine Arts [HU]

Courses must be completed with a grade of "C" or better in the Humanities and Fine Arts Core area. Students are encouraged to choose coursework from more than one discipline. The Humanities and Fine Arts Core area enables students to broaden and deepen their consideration of basic human values and their interpretation of the experiences of human beings.

The humanities are concerned with questions of human existence and the universality of human life, questions of meaning and the nature of

thinking and knowing, and questions of moral, aesthetic, and other human values. The humanities investigate these questions in both the present and the past and make use of philosophy, foreign languages, linguistics and communications studies, religious studies, literature, and fine arts.

The fine arts constitute the artist's creative deliberation about reality, meaning, knowledge, and values.

Social and Behavioral Sciences [SB]   Courses must be completed with a grade of "C" or better in the Social and Behavioral Sciences Core area. Students are encouraged to choose course work from more than one discipline.

The Social and Behavioral Sciences Core area provides scientific methods of inquiry and empirical knowledge about human behavior, both within society and within individuals. The forms of study may be cultural, economic, geographic, historical, linguistic, political, psychological, or social. The courses in this area address the challenge of understanding the diverse natures of individuals and cultural groups who live together in a world of diminishing economic, linguistic, military, political, and social distance.

Natural Sciences [SQ/SG]   Courses must be completed with a grade of "C" or better in the Natural Sciences Core area.

Courses in the Natural Sciences Core area help the student to develop an appreciation of the scope and limitations of scientific capability to contribute to the quality of society. This Core area emphasizes knowledge of methods of scientific inquiry and mastery of basic scientific principles and concepts, in particular those that relate to matter and energy in living and non-living systems. Firsthand exposure to scientific phenomena in the laboratory is important in developing and understanding the concepts, principles, and vocabulary of science. At least one of the two laboratory courses required in the Natural Sciences Core area must include an introduction to the fundamental behavior of matter and energy in physical or biological systems.

Natural Sciences [SQ] A & B
The AGEC A and B Natural Sciences Core area requires one laboratory course in natural sciences that includes a substantial introduction to the fundamental behavior of matter and energy in physical or biological systems.

Natural Sciences [SG] A & B
The AGEC A and B Natural Sciences Core area requires a second laboratory course in the natural sciences, for example, from anthropology, astronomy, biology, chemistry, experimental psychology, geology, microbiology, physical anthropology, physical geography, physics, plant biology

Natural Sciences S
The AGEC S Natural Sciences Core area requires eight semester credits of either university chemistry or eight semester credits of university physics or eight semester credits of general biology appropriate to the major.
SQ = Natural Science-Quantitative
SG = Natural Science-General

Subject Options (for AGEC S)

Courses in the Subject Options area help the student to be prepared for specific majors in science. Students completing AGEC S, through

careful selection of courses that meet the other major or pre-requisite requirements for Science degree, will meet this requirement. Using a transfer guide, courses would be selected from Mathematics courses above Calculus, and/or Science courses from: Astronomy, Biology, Botany, Chemistry, Environmental Science, Geology, Physical Geography, Physics, Zoology.

Awareness Areas

Students must satisfy two Awareness areas: Cultural Diversity in U.S. and either Global Awareness or Historical Awareness. Courses can satisfy a Core area and one or two Awareness areas simultaneously. Therefore, no additional semester credits are required to satisfy the two Awareness areas.

Cultural Diversity in the United States [C]

The contemporary "culture" of the United States involves the complex interplay of many different cultures that exist side by side in various states of harmony and conflict. U.S. history involves the experiences not only of different groups of European immigrants and their descendants, but also of diverse groups of American Indians, Hispanic Americans, African Americans and Asian Americans – all of whom played significant roles in the development of contemporary culture and together shape the future of the United States. At the same time, the recognition that gender, class, and religious differences cut across all distinctions of race and ethnicity offers an even richer variety of perspectives from which to view one. Awareness of cultural diversity and its multiple sources can illuminate the collective past, present, and future and can help to foster greater mutual understanding and respect.

The objective of the Cultural Diversity area requirement is to promote awareness of and appreciation for cultural diversity within the contemporary United States. This is accomplished through the study of the cultural, social, or scientific contributions of women and minority groups, examination of their experiences in the United States, or exploration of successful or unsuccessful interactions between and among cultural groups.

Global Awareness [G]

Human organizations and relationships have evolved from being family and village centered to the modern global interdependence that is apparent in many disciplines--for example, contemporary art, business, engineering, music, and the natural and social sciences. Many serious local and national problems are world issues that require solutions which exhibit mutuality and reciprocity. These problems occur in a wide variety of activities, such as food supply, ecology, health care delivery, language planning, information exchange, economic and social developments, law, technology transfer, and even philosophy and the arts. The Global Awareness Area recognizes the need for an understanding of the values, elements, and social processes of cultures other than the culture of the United States. The Global Awareness Area includes courses that recognize the nature of other contemporary cultures and the relationship of the American cultural system to generic human goals and welfare.

Courses that satisfy the global awareness option in the requirements are of one or more of the following types:
1. Area studies that are concerned with an examination of culture-specific elements of a region of the world;
2. The study of a non-English language;
3. Studies of international relationships, particularly those in which cultural change is facilitated by such factors as social and economic development, education, and the transfer of technology; and
4. Studies of cultural interrelationships of global scope such as the global interdependence produced by problems of world ecology.

Historical Awareness [H]

The Historical Awareness Area option in the requirements aims to develop a knowledge of the past that can be useful in shaping the present and future. Because historical forces and traditions have created modern life and lie just beneath its surface, historical awareness is an aid in the analysis of present-day problems. Also, because the historical past is a source of social and national identity, historical study can produce intercultural understanding by tracing cultural differences to their origins. Even the remote past may have instructive analogies for the present.

The Historical Awareness Area consists of courses that are historical in method and content. In this area, the term "history" designates a sequence of past events or a narrative whose intent or effect is to represent such a sequence.

The requirement presumes that these are human events and that history includes all that has been felt, thought, imagined, said, and done by human beings. History is present in the languages, art, music, literature, philosophy, religion, and the natural sciences, as well as in the social science traditionally called history.

Associate in General Studies (AGS) Degree

Description

The Maricopa County Community College District Associate in General Studies (AGS) degree is recommended for students whose educational goals require flexibility. The AGS allows students to choose any elective courses numbered 100 or above to complete the degree. Therefore, this degree may be less appropriate for students who intend to transfer to a baccalaureate-granting institution.

Students who demonstrate skills comparable to those in Critical Reading and/or Mathematics and/or Computer Usage may substitute acceptable elective courses to satisfy the total credits required for the degree.

Academic Policies That Govern the Associate in General Studies Degree:

- Requires a minimum of 60 semester credits in courses numbered 100 and above.

- AGS degree requirements follow with the use of a diagonal character (/) between course numbers to signify options. An asterisk (*) following the course number defines requirements with an effective begin term of spring;

- Requires grades as listed for specific areas such as the General Education Core where a minimum grade of "C" is required. Courses applied to other areas may be completed with a minimum grade of "D";

- Uses the following policies for course(s) satisfying multiple program areas;
  1. A course can simultaneously satisfy one Core area and one Distribution area. Courses that meet this criterion are bold print and underscored in the Core areas and Distribution areas.
  2. A course cannot satisfy more than one Core area, even if it is approved for more than one Core area.
  3. A course cannot satisfy more than one Distribution area, even if it is approved for more than one Distribution area.

- Follows the graduation policies within the general catalog;

- Includes both courses and their modular equivalents; either the course or the modular equivalents will satisfy the Associate in General Studies;

- Accepts one of the courses that is cross-referenced with other courses;

Degree Requirements
GENERAL EDUCATION CORE
(16 credits - grade of "C" or better)

First-Year Composition (6 credits)
ENG   English [101/107] & [102/108]

Oral Communication (3 credits)
COM   Communication **100/100AA & 100AB & 100AC/110/110AA &110AB & 110AC/225/230**

Critical Reading (3 credits)
CRE   Critical Reading **101**/Equivalent as indicated by assessment

Mathematics (3 credits)
MAT   Mathematics102/120/121/122/122AA/122AB/122AC/ 126/140/141/142/150/151/151AA/151AB/151AC/ 151AD/152/156/172/182/187/206/212/213/220/221/230/ 231/240/241/261/262/276/277 OR equivalent course
Satisfactory completion of a higher level Mathematics course.

Computer Usage (1 credit)
Computer-related course or demonstration of comparable computer skills. Additional courses may be approved by individual colleges. Students should contact their advisor for college-specific courses satisfying the requirement.

ACC	Accounting 115
ADA	Advertising Arts 169/170/170AA/170AB/173/173AA/ 173AB/173AC/175/175AA/175AB/177/177AA/177AB/ any 180 modules/183/183AA/183AB/183AC/283/283AA/ 283AB/283AC/289/289AA/289AB/289AC
AGB	Agribusiness 139
AJS	Administration of Justice Studies __119__/205
AMS	Automated Manufacturing System 150
ARC	Architecture 243/244/245
ART	Art 100/169/170/170AA/170AB/173/173AA/173AB/ 173AC/175/175AA/175AB/177/177AA/177AB/179/ 179AA/179AB/any 180 module/183/183AA/183AB/ 183AC/283/283AA/283AB/283AC/289/289AA/289AB/ 289AC
BIO	Biology 294
BPC	Business-Personal Computers Any BPC Course(s) (except 217AM)
CFS	Child/Family Studies 180
CIS	Computer Information Systems Any CIS Course(s) (except 162, 162AC, 169, 183AA, 217AM, 259, 262)
CSC	Computer Science Any CSC Course(s) (except 200, 200AA, 200AB, 210, 210AA, 210AB)
CTR	Court Reporting 101/102
DFT	Drafting Technology 103/105/any 105 module/150/251/ any 254 module/256AA
ECH	Early Childhood Education 238
EEE	Electrical Engineering 120
ELE	Electronic 131/181/241/243/245/281
ELT	Electronic Technology 131/241/243
ENG	English 100AE
ENV	Environmental Sciences 119
FON	Food & Nutrition 100/100AA/100AC/100AD
GBS	General Business 221
GPH	Physical Geography 220
HRM	Hotel Restaurant Management 126
JAS	Justice & Government Agencies Admin 225
JRN	Journalism 133
LAS	Paralegal Studies 229
MAT	Mathematics 206
MET	Manufacturing Technology 264
MTC	Music Theory/Composition 180/191
NET	Networking Technology 181/181AA
OAS	Office Automation Systems 111AA/111AB/113/119/ 130DK/135DK/235DK
PSY	Psychology 230
RTR	Realtime Reporting 101/102
SBS	Small Business 211
SMT	Semiconductor Manufacturing Technology 150
SWU	Social Work 225
TVL	Travel Agent Technology 203
VPT	Video Production Technology 106

GENERAL EDUCATION DISTRIBUTION AREAS (28-29 credits)

Humanities and Fine Arts (9 credits)
Students are encouraged to choose courses from more than one discipline.

AIS	American Indian Studies 213
AJS	Administration of Justice Studies 123
ARH	Art Humanities Any ARH Course(s)
ASB	Anthropology 211/220/222/223/253
CCS	Chicana and Chicano Studies 101
CNS	Construction 101
COM	Communication 241
DAH	Dance Humanities 100/201/250
EDU	Education 291/292/294
ENG	English 200/213/218
ENH	English Humanities Any ENH Course(s) (except 114, 250)
FRE	French 265
HCR	Health Care Related 210
HIS	History 101/102/103/108/109/111/113/114/243/253/254/275
HUM	Humanities Any HUM course(s) (except 108, 120, 203, 207)
INT	Interior Design 115/120/225
LAT	Latin 201/202
MHL	Music: History/Literature 140/143/145/146/153/155/242
PHI	Philosophy Any PHI Course(s) (except 113)
REL	Religious Studies Any REL Course(s) (except 271, 213)
SLC	Studies in Language & Culture 201
SPA	Spanish 241/242/265/266
SPH	Spanish Humanities 245
STO	Storytelling 292/294
THE	Theater 111/205/206/210
THP	Theater/Performance/Production 241
WST	Women's Studies 209/284/285/290

Social and Behavioral Sciences (9 credits)
Students are encouraged to choose courses from more than one discipline.

AFR	African American Studies 202/203/204
AIS	American Indian Studies 101/140/141/160
AJS	Administration of Justice Studies 101/119/162/200/225/258/259/270
ASB	Anthropology 102/202/211/214//222/223/230/235/238/245/252
ASM	Anthropology 104/275
CFS	Child/Family Studies 157/159/176/205/235/259
COM	Communication 100/100AA&100AB&100AC/110/110AA&110AB&110AC/163/230/250/263
ECH	Early Childhood Education 176
ECN	Economics Any ECN Course(s)
EDU	Education 221/222
EED	Early Education 200/205/222
ENG	English 213
EMT	Emergency Medical Technology 258
FOR	Forensic Science 275
FSC	Fire Science Technology 258
FUS	Future Studies 101
GCU	Cultural Geography 102/121/122/141/221/223/253
HES	Health Science 100
HIS	History any HIS Course(s) (except 111, 135, 170, 204)
IBS	International Business 109
MCO	Mass Communications 120

POS	Political Science Any POS course(s)
PSY	Psychology 101/123/132/156/157/215/218/225/235/240/241/243/245/250/258/260/266/270/277/280/292
REC	Recreation 120
SBU	Society and Business 200
SLC	Studies in Language & Culture 201
SOC	Sociology Any SOC course(s) (except 242, 253, 265, 270)
SWU	Social Work 102/171/258/292
WED	Wellness Education 110
WST	Women's Studies 100/161
YAQ	Yaqui Indian History and Culture 100

Natural Sciences (7-8 credits)
Two lecture courses and one corresponding laboratory course are to be selected. The lecture and corresponding laboratory course(s) may carry separate credit. For appropriate course selection students should consult with an advisor.

AGS	Agricultural Science 164/260
ASB	Anthropology 231
ASM	Anthropology 104
AST	Astronomy 101/102/111/112/113/114
BIO	Biology 100/101/102/105/107/108/109/145/149AF/149AH/149AK/149AL/149AM/149AN/156/160/181/182/201/202/205/241/245
CHM	Chemistry 107/107LL/130/130LL/150/151/151LL/152/152LL/154/154LL/230/230LL
ENV	Environmental Sciences 101
FON	Food and Nutrition 241&241LL
FOR	Forensic Science 105/106
GLG	Geology Any GLG course(s)
GPH	Physical Geography 111/112/113/210/211/212/214/213/215
PHS	Physical Science 110/120
PHY	Physics 101/101AA/111AA/ 111/112/ 115/116/121/131
PSY	Psychology 275/290AB/290AC

Literacy and Critical Inquiry (3 credits)

AIS	American Indian Studies 213
BIO	Biology 294
COM	Communication 222/225/241
CRE	Critical Reading 101
ENG	English 111/200/215/216/217/218
ENH	English Humanities 254/255
FON	Food & Nutrition 206
GBS	General Business 233
GPH	Physical Geography 211
HUM	Humanities 250/251
IFS	Information Studies 101
JRN	Journalism 201/234
MCO	Mass Communications 220
PHI	Philosophy 103/106
POS	Political Science 115
PSY	Psychology 290AB/290AC
REL	Religious Studies 203/205
THE	Theater 220
THP	Theater Performance/Production 241

Elective Courses (15-16 credits)
May select courses from prefixes already chosen for General Education Distribution requirements in order to develop depth in one or more subject areas.

Associate in Applied Science General Education (AAS GE)Degree

Purpose of the Degree

The Maricopa County Community College District Associate in Applied Science (AAS) degree is recommended for students who wish to gain a depth of technical expertise by completing an occupational program presented in the college catalog. Students should consult this catalog to determine specific program requirements.

Academic Policies that Govern the AAS degree:

- Requires 60 or more credits numbered 100 or above and includes credits or the equivalent in the General Education Core areas and credits in the Distribution areas. AAS degree requirements follow with the use of a diagonal character (/) between course numbers to signify options. An asterisk (*) following the course number defines requirements with an effective begin term of spring;

- Requires grades as listed for specific areas such as the General Education Core where a minimum grade of "C" is required. See specific AAS occupational degree for specific program grade requirements;

- Follows the graduation policies within the general catalog;

- Includes both courses and their modular equivalents, either the course or the modular equivalents will satisfy the Associate in Applied Science requirements.

- Requires at least 12 semester credit hours earned at the college awarding the AAS degree. The 12 hours in the AAS degree curricula may be in the Required Courses area and/or Restricted Electives courses. Courses from the General Education Core and Distribution area are excluded.

  Shared Programs are programs offered at multiple colleges but not available at all colleges. The requirements are identical at all the colleges offering the program.

  A shared program requires a minimum of six credit hours from the total program requirements to be completed with a grade of "C" or better at the college awarding the certificate or degree. The exception is the Nursing program. For those shared programs with less than six credit hours, the total hours for the program must be completed at the college awarding the certificate. The minimum of six credit hours in the certificate or degree curricula may be in the Required Courses area and/or the Restricted Electives. Courses from the General Education Core and Distribution areas are excluded;

  Students must apply for graduation from the college where they have successfully completed Block 4 of the Associate in Applied Science in Nursing.

- Requires completion of General Education courses as indicated in the General Education Requirements for the Associate in Applied Science degree from the Maricopa County Community College District, or completion of a curriculum as stated in the catalog;

- Accepts one of the courses that is cross-referenced with other courses;

GENERAL EDUCATION CORE

(15 credits - grade of "C" or better.)
Demonstrate college-level skills in the following areas:

First-Year Composition (6 credits)

ENG   English [101/107] & [102/108/111]

Oral Communication (3 credits)

COM   Communication 100/100AA & 100AB & 100AC/110/110AA & 110AB &110AC/225/230

Critical Reading (3 credits)

CRE   Critical Reading 101/111/Equivalent as indicated by assessment

Mathematics (3 credits)

MAT   Mathematics102/120/121/122/122AA/122AB/122AC/ 126/140/141/142/150/151/151AA/151AB/151AC/ 151AD/152/156/172/182/187/206/212/213/220/221/230/ 231/240/241/261/262/276/277
equivalent course/
Satisfactory completion of a higher level mathematics course

GENERAL EDUCATION DISTRIBUTION AREAS

(9-10 credits)

Humanities and Fine Arts (2-3 credits)

Students are encouraged to choose courses from more than one discipline.

AIS	American Indian Studies 213
AJS	Administration of Justice Studies 123
ARH	Art Humanities Any ARH Course(s)
ASB	Anthropology 211/220/222/223/253
CCS	Chicana and Chicano Studies 101
CNS	Construction 101
COM	Communication 241
DAH	Dance Humanities 100/201/250
EDU	Education 291/292/294
ENG	English 200/213/218
ENH	English Humanities Any ENH Course(s) (except 114, 250)
FRE	French 265
HCR	Health Care Related 210
HIS	History 101/102/103/108/111/113/114//243/253/254/275
HUM	Humanities Any HUM course(s) (except 120, 203, 207)
INT	Interior Design 115/120/225
LAT	Latin 201/202
MHL	Music: History/Literature 140/143/145/146/153/155/242
PHI	Philosophy Any PHI Course(s) (except 113)
REL	Religious Studies Any REL Course(s) (except 271)
SLC	Studies in Language & Culture 201
SPA	Spanish 241/242/265/266
SPH	Spanish Humanities 245
STO	Storytelling 292/294
THE	Theater 111/205/206/210
THP	Theater/Performance/Production 241
WST	Women's Studies 209/284/285/290

Social and Behavioral Sciences (3 credits)

Students are encouraged to choose courses from more than one discipline.

AIS	American Indian Studies 101/140/141/160
AFR	African American Studies 202/203/204
AJS	Administration of Justice Studies 101/162/200/225/258/259/270
ASB	Anthropology 102/202/211/214/222/223/230/235/238/245/252
ASM	Anthropology 104/275
CFS	Child/Family Studies 157/159/176/205/235/259
COM	Communications 100/100AA&100AB&100AC/110/110AA&110AB & 110AC/ 163/230/250/263
ECH	Early Childhood Education 176
ECN	Economics Any ECN course(s)
EDU	Education 221/222
EED	Early Education 200/205/222
EMT	Emergency Medical Technology 258
ENG	English 213
FOR	Forensic Science 275
FSC	Fire Science 258
FUS	Future Studies 101
GCU	Cultural Geography 102/121/122/141/221/223
HES	Health Science 100
HIS	History Any HIS course(s) (EXCEPT 111, 135, 170 204)
IBS	International Business 109
MCO	Mass Communications 120
POS	Political Science Any POS course(s)
PSY	Psychology 101/123/125/132/156/157/215/218/225/235/240/241/243/245/250/258/260/266/270/277/280/292
REC	Recreation 120
SBU	Society and Business 200
SLC	Studies in Language & Culture 201
SOC	Sociology Any SOC course(s) (except 242, 253, 265, 270)
SWU	Social Work 102/171/258/292
WED	Wellness Education 110
WST	Women's Studies 100/161
YAQ	Yaqui Indian History and Culture 100

Natural Sciences (4 credits)

The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection.

AGS	Agricultural Science 164/260
ASB	Anthropology 231
ASM	Anthropology 104
AST	Astronomy 101/102/111/112/113/114
BIO	Biology 100/101/102/105/107/108/109/149AN/145/156/160/181/182/201/202/205/241/245
CHM	Chemistry 107&107LL/130&130LL/150&151LL/151&151LL/152&152LL/154&154LL/230&230LL
FON	Food and Nutrition 241&241LL
FOR	Forensic Science 105/106
GLG	Geology Any GLG course(s) (except 140/ 251MC/275)
GPH	Physical Geography 111/112&113/211/212&214/213&215
PHS	Physical Science 110/120
PHY	Physics 101/101AA/111/111AA/112/115/116/121/131
PSY	Psychology 275/290AB/290AC

Associate in Science (AS) Degree

Description

The Maricopa County Community College District Associate in Science degree requires 60-64 semester credits for the program of study. The degree includes the following components:

I. General Education:
Arizona General Education Curriculum for Science (AGEC-S)
MCCCD Additional Requirements

II. General Electives

Purpose of the Degree

The Associate in Science degree is designed for students planning to transfer to four-year colleges and universities. In general, the components of the degree meet requirements for majors with more stringent mathematics and mathematics-based science requirements. Generally, the degree will transfer as a block without loss of credit to Arizona's public universities and other institutions with district-wide articulation agreements.

In most cases, courses used to satisfy the MCCCD Associate in Science will apply to university graduation requirements of the university major for which the Associate in Science is designed. Information regarding the articulation of the Associate in Science with majors at the Arizona public universities can be accessed via the following website: **www.aztransfer.com**

Academic Policies that Govern the Associate in Science Degree

- Completion of the Associate in Science and the AGEC-S provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Science degree.

- A minimum of 60 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-S may be completed in 36-38 semester credits with the following stipulations
  o Courses can satisfy a Core area and one or two Awareness areas simultaneously.
  o A course cannot be used to satisfy more than one Core area requirement in the AGEC A and B.

  o A course can be used to satisfy the L and SB or L and HU requirements simultaneously in the Core area for the AGEC S.

- General Education Courses can satisfy multiple areas within the degree simultaneously (AGEC-S Core Area, AGEC Awareness Area, MCCCD Additional Requirements, or lower-division courses applicable to the major).

- Effective fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-S requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC S for specific course information via the following website: **www.maricopa.edu/academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement: All courses used to satisfy electives must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC-S or Associate in Science Degree.

- Courses and their modular equivalents will satisfy AGEC-S and Associate in Science requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements

The 60-64 semester credits required for the Associate in Science follow. See the list titled <u>MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC S</u> for specific course information via the following website: **www.maricopa.edu/academic/ccta/** This list identifies the courses in alpha-order by prefix as well as the Core Areas and Awareness Areas where the course will apply. For purposes of clarifying requirements in the Mathematics and Natural Sciences areas on the list and the AGEC requirements, an A, B, and/or S character may follow the [MA], [SQ], [SG] general education designations and refers to the specific AGEC.

I. **MCCCD General Education**

The MCCCD General Education includes two areas: MCCCD AGEC-S and MCCCD Additional Requirements.

MCCCD AGEC-S

1. Core Areas: 36-38

    a. **First-Year Composition (FYC)**   6

    b. **Literacy and Critical Inquiry [L]**   0-3
    Recommend selecting a course that satisfies L (Literacy and Critical Inquiry) and SB (Social and Behavioral Sciences) OR L (Literacy and Critical Inquiry) and HU (Humanities and Fine Arts) or L (Literacy and Critical Inquiry) and COM or L (Literacy and Critical Inquiry) and CRE101 requirements simultaneously.

    c. **Mathematical Studies [MA]**   4
    To complete the Mathematical Studies requirement, select one course to satisfy Mathematics [MA] S.
    1) Mathematics [MA] S (4 credits)
    Select a calculus course MAT220 or MAT221, OR Any mathematics course for which MAT220 or MAT221 is a prerequisite,

    d. **Humanities and Fine Arts [HU]**   6
    Students are encouraged to choose course work from more than one discipline for a total of six semester credits. Select a course that satisfies both L and HU requirements simultaneously.

    e. **Social and Behavioral Sciences [SB]**   6
    Students are encouraged to choose course work from more than one discipline for a total of six semester credits. Select a course that satisfies both L and SB requirements simultaneously.

    f. **Natural Sciences**   8
    To complete the Natural Sciences requirement:
    Select eight (8) semester credits of either general chemistry
    CHM151 & CHM151LL and CHM152 & CHM152LL OR
    Eight (8) semester credits of university physics
    PHY115 & PHY116 or PHY121 & PHY131 OR
    Eight (8) semester credits of general biology, BIO181 & BIO182 appropriate to the major.

    g. Subject Options (subject based on major)   6-8
    Students completing AGEC S, through careful selection of courses that meet the other major or pre-requisite requirements for Science degree, will meet this requirement. Using a transfer guide, select courses from Mathematics courses above Calculus, and/or Science courses from:
    Astronomy, Biology, Botany, Chemistry, Environmental Science, Geology, Physical Geography, Physics, Zoology.

2. **Awareness Areas:**
    Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-six to thirty-eight semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
    Cultural Diversity in the United States [C] AND
    Global Awareness [G] OR
    Historical Awareness [H]

3. **MCCCD Additional Requirements**   0-6
    Students must satisfy Oral Communication and Critical Reading areas. However, it is not necessary for students to exceed the thirty-six to thirty-eight semester credits required in order to complete the MCCCD Additional Requirements.

    a. **Oral Communication**
    A total of three (3) semester credits are required for Oral Communication. However, if students select a communication course that satisfies both the Oral Communication area and an area within the Core, then the Oral Communication requirement has been satisfied and additional electives may be taken.
    Select from the following options:
    COM100 [SB] (3 credits) OR
    COM100AA & COM100AB & COM100AC [SB] (3 credits) OR
    COM110 [SB] (3 credits) OR
    COM110AA & COM110AB & COM110AC [SB] (3 credits) OR
    COM225 [L] (3 credits) OR
    COM230 [SB] (3 credits)

    b. **Critical Reading**
    A total of three (3) semester credits are required for the Critical Reading area. If students demonstrate proficiency through assessment, then the Critical Reading requirement has been satisfied and additional electives may be taken.
    CRE101 [L] OR equivalent as indicated by assessment

II. **General Electives**
Select courses to complete a minimum of 60 semester credits but no more than a total of 64 semester credits.

For students who have decided on a major that articulates with the AS, but who are undecided on the university to which they will transfer, courses satisfying the General Electives area should be selected from the list of Common Courses, Arizona Transfer Pathway Guides, and/or University Transfer Guides in order for the courses to apply in the major upon transfer.

The list of Common Courses for each major is included in the Arizona Transfer Pathway Guides. University Transfer Guides are also available for the Arizona public universities. These guides, both statewide and institutional, are accessible on the following web site: **www.aztransfer.com**

Students must select MCCCD courses that are transferable to the university or universities to which the student plans to transfer, as elective credit or better according to the Arizona CEG within the AZCAS. For appropriate course selection, students should consult with an advisor.

For some majors, students must demonstrate 4th semester proficiency at the 202 course level to satisfy the Non-English Language Requirements. Students should consult the Arizona Transfer Pathway Guides and/or the University Transfer Guides to determine this requirement for the major at the university to which they intend to transfer. If required, it is recommended that students choose Maricopa courses as electives to meet this requirement as part of the Associate in Science degree.

Students who are undecided on a major or university should consult an advisor. Not all majors have common courses, so it is recommended that students consult with an advisor for a list of common courses or assistance with selecting appropriate electives.

Associate in Science Total Credits: **60-64**

Associate in Arts, Elementary Education (AAEE) Degree

Description
The MCCCD Associate in Arts in Elementary Education (AAEE) requires the student to complete a total of 60-63 semester credits in the program of study. The degree has two major components:
I.   MCCCD General Education
     Arizona General Education Curriculum for Arts (AGEC-A)
     Additional MCCCD Requirements
II. Elementary Education Requirements
     Education Foundations
     Electives for Arizona Professional Teacher Standards

Purpose of the Degree
The AAEE is designed for the student who plans to transfer to an Elementary Education, Early Childhood, Multicultural/Multilingual, or Special Education program at an Arizona public higher education institution and/or who plans to become a classroom instructional aide.

Generally, the degree transfers as a block without loss of credit to Arizona's public universities. In most cases, courses applied to the MCCCD Associate in Arts in Elementary Education also apply to graduation requirements of the university major for which the AAEE was designed.

Academic Policies that Govern the Associate in Arts Elementary Education Degree:
- Completion of the Associate in Arts and the AGEC-A provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Arts degree.

- A minimum of 60 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions.

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-A may be completed in 35 semester credits with the following stipulations:
  o Courses can satisfy a Core Area and one or two Awareness Areas simultaneously
  o A course cannot be used to satisfy more than one Core Area
  o Courses can satisfy an Elementary Education Requirement and one or more Awareness Areas simultaneously.
  o A course cannot satisfy both the Elementary Education Requirement and a Core Area Requirement simultaneously.

- Effective Fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-A requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: **http://www.maricopa.edu/academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement. must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC A or the Associate in Arts Elementary Education degree.

- Courses and their modular equivalents will satisfy AGEC-A and Associate in Arts in Elementary Education requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements

I. **MCCCD General Education Requirements**   **Credits**

    A. MCCCD AGEC - A

        1. **Core Areas**   **35-38**

            a. **First-Year Composition (FYC)**   **6**
            ENG101/102 **OR** ENG107/108

            b. **Mathematics Studies [MA] and Computer/**
            Statistics/Quantitative Applications [CS]   **6**
              1) MAT142 [MA] College Mathematics, or higher
                  (NOTE: MAT150, MAT151, MAT152, MAT156 and MAT157 are excluded) AND
              2) CIS105 [CS] Survey of Computer Information Systems, OR
                  BPC110 [CS] Computer Usage and Applications

            c. **Literacy and Critical Inquiry [L]**   **3**
            Select the following:
            COM225 Public Speaking

            d. **Humanities and Fine Arts [HU]**   **6**
              1) Select (3) semester credits from the following courses:
                  ARH100 Introduction to Art
                  ARH101 Prehistoric through Gothic Art
                  ARH102 Renaissance through Contemporary Art AND
              2) Select (3) semester credits from the following courses:
                  ENH110 Introduction to Literature
                  ENH241 American Literature Before 1860
                  ENH242 American Literature After 1860
                  EDU/ENH291 Children's Literature
                  HUM250 or HUM251 Ideas and Values in the Humanities
                  THE111 Introduction to Theatre
                  DAH100 Introduction to Dance
                  DAH201 World Dance Perspectives
                  MHL140 Survey of Music History
                  MHL143 Music in World Cultures

            e. **Social and Behavioral Sciences [SB]**   **6**
              1) Select 3 semester credits from the following courses:
                  HIS103 United States History to 1870
                  HIS104 United States History 1870 to Present AND
              2) Select 3 semester credits from the following courses:
                  PSY101 Introduction to Psychology
                  GCU121 World Geography I: Eastern Hemisphere
                  GCU122 World Geography II: Western Hemisphere
                  ECN211 Macroeconomic Principles
                  ECN212 Microeconomic Principles
                  POS110 American National Government
                  ECH/CFS176 Child Development
                  CFS205 Human Development

f. **Natural Sciences—Science-Quantitative [SQ] and Science-General [SG]   8**
To complete the Natural Sciences requirement, select a total of 8 semester credits from the following categories. At least 4 credits must be SQ courses. You can select 4 semester credits of SG and 4 semester credits of SQ for a total of 8 semester credits. Natural Sciences courses must include or be accompanied by the corresponding laboratory course. When the lecture and corresponding laboratory are awarded separate credit, both will be counted as equivalent to one course in that discipline.
1) Life Sciences-Select 4 semester credits of SQ or SG from BIO AND
2) Physical Sciences or Earth/Space Sciences-Select 4 semester credits of SQ or SG credits from the following prefixes:
   AGS
   ASM
   AST
   CHM
   GPH
   GLG
   PHS
   PHY
   Note: Students are advised to check with the university they plan to attend as requirements for lab sciences may vary.

g. **Awareness Areas   0**
The MCCCD AAEE requires coursework in two Awareness Areas:
   Cultural Diversity in the U.S. [C] AND
   Historical Awareness [H] OR
   Global Awareness [G]

Courses can satisfy a Core Area Requirement and one or more Awareness Areas, or can satisfy an Elementary Education Requirement and one or more Awareness Areas simultaneously. Therefore, no additional semester credits are required to satisfy the two Awareness Areas.

2. **MCCCD Additional Requirements   0-3**
   a. **Oral Communication**
   Satisfied by COM225 taken for Literacy and Critical Inquiry Requirement
   b. **Critical Reading**
   CRE101 or exemption by testing

II. **Elementary Education Requirements   25**
A total of 25 semester credits are required to satisfy the Elementary Education Requirements.

A. **Education Foundations   18**
Complete the following courses to satisfy the Education Foundations requirements:
EDU220 Introduction to Serving English Language Learners
EDU221 Introduction to Education
EDU222 Introduction to the Exceptiona Learner
EDU230 Cultural Diversity in Education
MAT156 Mathematics for Elementary Teachers I
MAT157 Mathematics for Elementary Teachers II

B. **Electives for Arizona Professional Teacher Standards   7**
A total of 7 semester credits are required to satisfy the Electives for Arizona Professional Teacher Standards. Courses must transfer to all public Arizona universities as Elective Credit, Departmental Elective, or Equivalent to a university course as indicated in the Arizona Course Equivalency Guide in effect when the course is taken. Courses identified as Non-transferable in the Arizona Course Equivalency Guide cannot be used to satisfy this requirement.

Content Area Electives
Select 7 credits from the following:
Any ARH, ART, CIS, ECN, BPC, ENG, ENH, GCU, GPH, HIS, MHL, MTC, POS, THE, THP prefixed course(s)
Any EDU prefixed course(s) (except EDU250)
Any MAT (courses numbered higher than 142 except MAT156 and MAT157)
Any Foreign Language course(s)
Any Natural Science course(s)
CFS/ECH176 Child Development
CFS205 Human Development
EED215 Early Learning: Heath, Safety, Nutrition and Fitness
FON100 Introductory Nutrition

AAEE Total Credits: 60-63

Associate in Arts (AA) Degree

Description
The Maricopa County Community College District Associate in Arts degree requires 60-64 semester credits for the program of study. The degree includes the following components:

I. General Education:
   Arizona General Education Curriculum for Arts (AGEC-A)
   MCCCD Additional Requirements
II. General Electives

Purpose of the Degree
The Associate in Arts degree is designed for students planning to transfer to four-year colleges and universities. In general, the components of the degree meet requirements for majors in the Liberal Arts or programs of study other than business or science. Generally, the degree will transfer as a block without loss of credit to Arizona's public universities and other institutions with district-wide articulation agreements.

In most cases, courses used to satisfy the MCCCD Associate in Arts will apply to university graduation requirements of the university major for which the Associate in Arts is designed. Information regarding the articulation of the Associate in Arts with majors at the Arizona public universities can be accessed via the following website: **www.aztransfer.com**

Academic Policies that Govern the Associate in Arts Degree

- Completion of the Associate in Arts and the AGEC-A provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Arts degree.

- A minimum of 60 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions.

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-A may be completed in 35 semester credits with the following stipulations:
  o Courses can satisfy a Core Area and one or two Awareness Areas simultaneously
  o A course cannot be used to satisfy more than one Core Area

- General Education Courses can satisfy multiple areas within the degree simultaneously (AGEC-A Core Area, AGEC Awareness Area, MCCCD Additional Requirements, or lower-division courses applicable to the major).

- Effective Fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-A requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled <u>MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S</u> for specific course information via the following website: **www.maricopa.edu/academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC-A or Associate in Arts Degree.

- Courses and their modular equivalents will satisfy AGEC-A and Associate in Arts requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements
The 60-64 semester credits required for the Associate in Arts follow. See the list titled <u>MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S</u> for specific course information via the following website: **www.maricopa.edu/academic/ccta/** This list identifies the courses in alpha-order by prefix as well as the Core Areas and Awareness Areas where the course will apply. For purposes of clarifying requirements in the Mathematics and Natural Sciences areas on the list and the AGEC requirements, an A, B, and/or S character

may follow the [MA], [SQ], [SG] general education designations and refers to the specific AGEC.

I. **MCCCD General Education**   **Credits**

The MCCCD General Education includes two areas: MCCCD AGEC-A and MCCCD Additional Requirements.

MCCCD AGEC-A   **Credits**

1. Core Areas: 35

    a. **First-Year Composition (FYC)**   6

    b. **Literacy and Critical Inquiry [L]**   3

    c. **Mathematical Studies [MA/CS]**   6
    To complete the Mathematical Studies requirement, select one course to satisfy Mathematics [MA] A and a second course from Computer/Statistics/Quantitative Applications [CS].
        1) Mathematics [MA] A (3 credits)
        Note: requires a course in college mathematics (MAT142) or college algebra (MAT 150, MAT 151, MAT152) or pre-calculus (MAT 187) or any other mathematics course designated with the MA general education value and for which college algebra is a prerequisite. AND
        2) Computer/Statistics/Quantitative Applications [CS] (3 credits)

    d. **Humanities and Fine Arts [HU]**   6
    Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

    e. **Social and Behavioral Sciences [SB]**   6
    Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

    f. **Natural Sciences [SQ/SG]**   8
    To complete the Natural Sciences requirement: Select four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of eight (8) semester credits, OR eight (8) semester credits of [SQ]. Students can not take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.

    The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course Applicability System (AZCAS) for information on equivalencies.

2. **Awareness Areas:**
Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas

simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
    Cultural Diversity in the United States [C] AND
    Global Awareness [G] OR
    Historical Awareness [H]

3. **MCCCD Additional Requirements**   0-6
Students must satisfy Oral Communication and Critical Reading areas. However, it is not necessary for students to exceed the thirty-five semester credits required in order to complete the MCCCD Additional Requirements because courses can satisfy a Core Area and MCCCD Additional Requirements simultaneously. Therefore no additional semester credits are required to satisfy Oral Communication and Critical Reading.

    a. **Oral Communication**
    A total of three (3) semester credits is required for Oral Communication. However, if students select a communication course that satisfies both the Oral Communication area and an area within the Core, then the Oral Communication requirement has been satisfied and additional electives may be taken.
    Select from the following options:
    COM100 [SB] (3 credits) OR
    COM100AA & COM100AB & COM100AC [SB] (3 credits) OR
    COM110 [SB] (3 credits) OR
    COM110AA & COM110AB & COM110AC [SB] (3 credits) OR
    COM225 [L] (3 credits) OR
    COM230 [SB] (3 credits)

    b. **Critical Reading**
    A total of three (3) semester credits is required for the Critical Reading area. However, if students complete CRE 101 and apply it to AGEC-A Core Requirements or if the students demonstrate proficiency through assessment, then the Critical Reading requirement has been satisfied and additional electives may be taken.

    CRE101 [L] OR equivalent as indicated by assessment

II. **General Electives**
Select courses to complete a minimum of 60 semester credits but no more than a total of 64 semester credits.

For students who have decided on a major that articulates with the AA, but who are undecided on the university to which they will transfer, courses satisfying the General Electives area should be selected from the list of Common Courses, Arizona Transfer Pathway Guides, and/or University Transfer Guides in order for the courses to apply in the major upon transfer.

The list of Common Courses for each major is included in the Arizona Transfer Pathway Guides. University Transfer Guides are also available for the Arizona public universities. These guides, both statewide and institutional, are accessible on the following web site: **www.aztransfer.com/**

Students must select MCCCD courses that are transferable to the university or universities to which the student plans to transfer, as

elective credit or better according to the Arizona CEG within the AZCAS. For appropriate course selection, students should consult with an advisor.

For some majors, students must demonstrate 4th semester proficiency at the 202 course level to satisfy the Non-English Language Requirements. Students should consult the Arizona Transfer Pathway Guides and/or the University Transfer Guides to determine this requirement for the major at the university to which they intend to transfer. If required, it is recommended that students choose Maricopa courses as electives to meet this requirement as part of the Associate in Arts degree.

Students who are undecided on a major or university should consult an advisor. Not all majors have common courses, so it is recommended that students consult with an advisor for a list of common courses or assistance with selecting appropriate electives.

Associate in Arts Total Credits   60-64

Associate in Arts, Fine Arts (AAFA) - Art

Description

The Maricopa County Community College District Associate in Arts, Fine Arts - Art degree requires a minimum of 63 semester credits for the program of study. The degree includes the following components:

I. General Education:
    Arizona General Education Curriculum for Arts (AGEC-A)
    MCCCD Additional Requirements
II. Fine Arts Requirements – Art

Purpose of the Degree

The Associate in Arts, Fine Arts - Art degree is designed for students planning to transfer to four-year colleges and universities. In general, the components of the degree meet requirements for majors in the Fine Arts. The degree is designed to prepare students to meet selective admission criteria for programs such as the Bachelor of Fine Arts, which may require a portfolio or performance requirement.

The semester credits used to satisfy the MCCCD Associate in Arts, Fine Arts - Art degree may apply to university graduation requirements of the university major for which the degree is designed. Information regarding the articulation of the degree with majors at the Arizona public universities can be accessed via the following website: www.aztransfer.com

Academic Policies that Govern the Associate in Arts, Fine Arts – Art Degree

- Completion of the Associate in Arts, Fine Arts - Art degree and the AGEC-A provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Arts, Fine Arts - Art degree.

- A minimum of 63 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions.

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-A may be completed in 35 semester credits with the following stipulations
    o Courses can satisfy a Core Area and one or two Awareness Areas simultaneously
    o A course cannot be used to satisfy more than one Core Area

- General Education Courses can satisfy multiple areas within the degree simultaneously (AGEC-A Core Area, AGEC Awareness Area, MCCCD Additional Requirements, or lower-division courses applicable to the major).

- Effective Fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-A requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: **www.maricopa.edu/ academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC-A or Associate in Arts, Fine - Arts Degree.

- Courses and their modular equivalents will satisfy AGEC-A and Associate in Arts, Fine Arts – Art requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements

The 63 semester credits required for the Associate in Arts, Fine - Art degree follow. See the list titled MCCCD Courses That Can Be used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: **www.maricopa. edu/academic/ccta/** This list identifies the courses in alpha-order by prefix as well as the Core Areas and Awareness Areas where the course will apply. For purposes of clarifying requirements in the Mathematics and Natural Sciences areas on the list and the AGEC requirements,

an A, B, and/or S character may follow the [MA], [SQ], [SG] general education designations and refers to the specific AGEC.

MCCCD General Education
The MCCCD General Education includes two areas: MCCCD AGEC-A and MCCCD Additional Requirements.
MCCCD AGEC-A
1. **Core Areas:** **Credits: 35**

    a. **First-Year Composition [FYC]:** **6**

    b. **Literacy and Critical Inquiry [L]:** **3**

    c. **Mathematical Studies [MA/CS]:** **6**
To complete the Mathematical Studies requirement, select one course to satisfy Mathematics [MA] A and a second course from Computer/Statistics/Quantitative Applications [CS].
    1) Mathematics [MA] A (3 credits)
Select a course in college mathematics or college algebra or pre-calculus or any other mathematics course for which college algebra is a prerequisite. AND
    2) Computer/Statistics/Quantitative Applications [CS] (3 credits)

    d. **Humanities and Fine Arts [HU]:** **6**
Students are encouraged to choose course work from more than one discipline for a total of six semester credits.
Select the following:
ARH101 Prehistoric Through Gothic Art   3

    e. **Social and Behavioral Sciences [SB]:** **6**
Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

    f. **Natural Sciences [SQ/SG]:** **8**
To complete the Natural Sciences requirement: Select four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of eight (8) semester credits, OR eight (8) semester credits of [SQ]. Students cannot take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.

The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course Applicability System (AZCAS) for information on equivalencies.

2. **Awareness Areas:** **Credits: 0**
Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
    Cultural Diversity in the United States [C] AND
    Global Awareness [G] OR
    Historical Awareness [H]

MCCCD Additional Requirements: **Credits: 0-6**

Students must satisfy Oral Communication and Critical Reading areas. However, it is not necessary for students to exceed the thirty-five semester credits required in order to complete the MCCCD Additional Requirements because courses can satisfy a Core Area and MCCCD Additional Requirements simultaneously. Therefore no additional semester credits are required to satisfy Oral Communication and Critical Reading.

a.   Oral Communication: **Credits: 3**

A total of three (3) semester credits is required for Oral Communication. However, if students select a communication course that satisfies both the Oral Communication area and an area within the Core, then the Oral Communication requirement has been satisfied and additional electives may be taken.

Select from the following options:
COM100 [SB] (3 credits) OR
COM100AA & COM100AB & COM100AC [SB] (3 credits) OR
COM110 [SB] (3 credits) OR
COM110AA & COM110AB & COM110AC [SB] (3 credits) OR
COM225 [L] (3 credits) OR
COM230 [SB] (3 credits)

b.   Critical Reading: **Credits: 3**

A total of three (3) semester credits is required for the Critical Reading area. However, if students complete CRE 101 and apply it to AGEC-A Core Requirements or if the students demonstrate proficiency through assessment, then the Critical Reading requirement has been satisfied. Select from the following options to complete 3 credits:

CRE101   (3 credits) OR equivalent as indicated by assessment

II.   **Fine Arts Requirements – Art**   **Credits: 28**

A minimum of 28 credits are required to satisfy the Fine Arts Requirements – Art.

Foundations: **Credits: 16**
Select the following:

ADA/ART112	Two-Dimensional Design	3
ADA/ART115	Three-Dimensional Design	3
ARH102	Renaissance Through Contemporary Art	3
ART111	Drawing I	3
ART113	Color	3
ART255AB	The Portfolio	1

Restricted Electives: **Credits: 12**
Select from the following options to complete a minimum of twelve semester credits:

ART116	Life Drawing I	3
ART122	Drawing and Composition II	3
ART131	Photography I	3
ART151	Sculpture I	3
ART161	Ceramics I	3
ART165	Watercolor Painting I	3
ART167	Painting I	3

Associate in Arts, Fine Arts – Art Total Credits: 63

Associate in Arts, Fine Arts (AAFA) - Dance

Description

The Maricopa County Community College District Associate in Arts, Fine Arts - Dance degree requires a minimum of 64 semester credits for the program of study. The degree includes the following components:

I.   General Education:
     Arizona General Education Curriculum for Arts (AGEC-A)
     MCCCD Additional Requirements
II. Fine Arts Requirements – Dance

Purpose of the Degree

The Associate in Arts, Fine Arts - Dance degree is designed for students planning to transfer to four-year colleges and universities. In general, the components of the degree meet requirements for majors in the Fine Arts. The degree is designed to prepare students to meet selective admission criteria for programs such as the Bachelor of Fine Arts, which may require a portfolio or performance requirement.

The semester credits used to satisfy the MCCCD Associate in Arts, Fine Arts - Dance degree may apply to university graduation requirements of the university major for which the degree is designed. Information regarding the articulation of the degree with majors at the Arizona public universities can be accessed via the following website: www.aztransfer.com

Academic Policies that Govern the Associate in Arts, Fine Arts - Dance Degree

- Completion of the Associate in Arts, Fine Arts -Dance degree and the AGEC-A provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Arts, Fine Arts - Dance degree.

- A minimum of 64 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions;

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-A may be completed in 35 semester credits with the following stipulations:
  o   Courses can satisfy a Core Area and one or two Awareness Areas simultaneously
  o   A course cannot be used to satisfy more than one Core Area

- General Education Courses can satisfy multiple areas within the degree simultaneously (AGEC-A Core Area, AGEC Awareness Area, MCCCD Additional Requirements, or lower-division courses applicable to the major).

- Effective Fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-A requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: **www.maricopa.edu/academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC-A or Associate in Arts, Fine Arts-Dance Degree.

- Courses and their modular equivalents will satisfy AGEC-A and Associate in Arts, Fine Arts - Dance requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements

The 64 semester credits required for the Associate in Arts, Fine Arts - Dance degree follow. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: www.maricopa. edu/academic/ccta/ This list identifies the courses in alpha-order by

prefix as well as the Core Areas and Awareness Areas where the course will apply. For purposes of clarifying requirements in the Mathematics and Natural Sciences areas on the list and the AGEC requirements, an A, B, and/or S character may follow the [MA], [SQ], [SG] general education designations and refers to the specific AGEC.

I. **MCCCD General Education**
    The MCCCD General Education includes two areas: MCCCD AGEC-A and MCCCD Additional Requirements.

    MCCCD AGEC-A
    1. **Core Areas: Credits:**   **35 Credits**

        a. **First-Year Composition (FYC)**   6

        b. **Literacy and Critical Inquiry [L]**   3

        c. **Mathematical Studies [MA/CS]**   6
            To complete the Mathematical Studies requirement, select one course to satisfy Mathematics [MA] A and a second course from Computer/Statistics/Quantitative Applications [CS].
            1) Mathematics [MA] A (3 credits)
                Select a course in college mathematics or college algebra or pre-calculus or any other mathematics course for which college algebra is a prerequisite. **AND**
            2) Computer/Statistics/Quantitative Applications [CS] (3 credits)

        d. **Humanities and Fine Arts [HU]**   6
            Students are encouraged to choose course work from more than one discipline for a total of six semester credits. Select from the following options to complete three credits:
            DAH100   Introduction to Dance   3
            DAH201   World Dance Perspectives   3

        e. **Social and Behavioral Sciences [SB]**   6
            Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

        f. **Natural Sciences [SQ/SG]**   8
            To complete the Natural Sciences requirement: Select four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of eight (8) semester credits, OR eight (8) semester credits of [SQ]. Students cannot take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.

            The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course Applicability System (AZCAS) for information on equivalencies. Select from the following options to complete four credits:

            BIO160   Introduction to Human
                      Anatomy and Physiology   4
            BIO201   Human Anatomy and Physiology I   4

    2. **Awareness Areas**   **0 Credits**
        Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
        Cultural Diversity in the United States [C] **AND**
        Global Awareness [G] **OR** Historical Awareness [H]

    MCCCD Additional Requirements: **0-6 Credits**
    Students must satisfy Oral Communication and Critical Reading areas. However, it is not necessary for students to exceed the thirty-five semester credits required in order to complete the MCCCD Additional Requirements because courses can satisfy a Core Area and MCCCD Additional Requirements simultaneously. Therefore no additional semester credits are required to satisfy Oral Communication and Critical Reading.

        a. **Oral Communication**   3
            A total of three (3) semester credits is required for Oral Communication. However, if students select a communication course that satisfies both the Oral Communication area and an area within the Core, then the Oral Communication requirement has been satisfied and additional electives may be taken.
            Select from the following options:
            COM100 [SB] (3 credits) **OR**
            COM100AA & COM100AB & COM100AC [SB] (3 credits) **OR**
            COM110 [SB] (3 credits) **OR**
            COM110AA & COM110AB & COM110AC [SB] (3 credits) **OR**
            COM225 [L] (3 credits) **OR**
            COM230 [SB] (3 credits)

        b. **Critical Reading**   3
            A total of three (3) semester credits is required for the Critical Reading area. However, if students complete CRE 101 and apply it to AGEC-A Core Requirements or if the students demonstrate proficiency through assessment, then the Critical Reading requirement has been satisfied and additional electives may be taken. Select from the following options to complete 3 credits:
            CRE101 [L] (3 credits) **OR** equivalent as indicated by assessment

II. **Fine Arts Requirements – Dance: Credits: 29**
    A minimum of 29 credits are required to satisfy the Fine Arts Requirements – Dance.

    Part I: **11 Credits**
    Select the following:
    DAN150   Dance Performance I   1
    DAN210   Dance Production I   3
    DAN221   Rhythmic Theory for Dance I   2
    DAN264   Choreography I   3
    DAN280   Dance Practicum   2

Part II: **9 Credits**

Select from the following options to complete a minimum of nine semester credits. Students must attain Level III competency in ballet and modern dance courses:

DAN120++	World Dance (any module)	1
DAN129	Musical Theatre Dance I	1
DAN130	Musical Theatre Dance II	1
DAN131	Ballet I	1
DAN132	Modern Dance I	1
DAN133	Modern Jazz Dance I	1
DAN134	Ballet II	1
DAN135	Modern Dance II	1
DAN136	Modern Jazz Dance II	1
DAN229	Musical Theatre Dance III	1
DAN230	Musical Theatre Dance IV	1
DAN231	Ballet III	1
DAN231AA	Ballet III: Intensive	2
DAN232	Modern Dance III	1
DAN233	Modern Jazz Dance III	1
DAN234	Ballet IV	1
DAN234 AA	Ballet IV: Intensive	2
DAN235	Modern Dance IV	1
DAN236	Modern Jazz Dance IV	1
DAN237	Ballet Pointe I	1
DAN290	Dance Conservatory I (any module)	1-3
DAN291	Dance Conservatory II (any module)	1-3
DAN292	Dance Conservatory III (any module)	1-3

Part III: Restricted Electives: **9 Credits**

The remaining credits from DAH and DAN prefixed courses should be selected as prescribed by the dance advisor. Only three of the remaining credits may be selected from the following DAN prefixed courses:

DAH+++++ Any DAH prefixed course EXCEPT DAH100 or DAH201 if selected to satisfy the AGEC A Humanities and Fine Arts Area.

DAN115++	Contemporary Dance Trends (any module)	1
DAN120++	World Dance (any module)	1
DAN125++	Social Dance (any module)	1
DAN129	Musical Theatre Dance I	1
DAN130	Musical Theatre Dance II	1
DAN133	Modern Jazz Dance I	1
DAN136	Modern Jazz Dance II	1
DAN140	Tap Dance I	1
DAN141	Dance Workshop	1
DAN145	Tap Dance II	1
DAN146	Tap Dance Ensemble	1
DAN150	Dance Performance I	1
DAN164	Improvisation	1
DAN230	Musical Theatre Dance IV	1
DAN231	Ballet III	1
DAN231AA	Ballet III: Intensive	2
DAN232	Modern Dance III	1
DAN233	Modern Jazz Dance III	1
DAN234	Ballet IV	1
DAN234AA	Ballet IV: Intensive	2
DAN235	Modern Dance IV	1
DAN236	Modern Jazz Dance IV	1
DAN237	Ballet Pointe I	1
DAN290++	Dance Conservatory I (any module)	1-3
DAN291++	Dance Conservatory II (any module)	1-3
DAN292++	Dance Conservatory III (any module)	1-3
*DAN298++	Special Projects (any module)	1-3

Selection of DAN298 courses to satisfy degree requirements should be done in consultation with a program advisor or faculty member as Special Projects courses do not currently transfer to any of the three Arizona state public universities.

Associate in Arts, Fine Arts – Dance Total Credits: 64

Associate in Arts, Fine Arts (AAFA) - Theatre

Description
The Maricopa County Community College District Associate in Arts, Fine Arts - Theatre degree requires a minimum of 60-64 semester credits for the program of study. The degree includes the following components:

I.   General Education:
Arizona General Education Curriculum for Arts (AGEC-A)
MCCCD Additional Requirements

II.   Fine Arts Requirements – Theatre

Purpose of the Degree
The Associate in Arts, Fine Arts - Theatre degree is designed for students planning to transfer to four-year colleges and universities. In general, the components of the degree meet requirements for majors in the Fine Arts. The degree is designed to prepare students to meet selective admission criteria for programs such as the Bachelor of Fine Arts, which may require a portfolio or performance requirement.

The semester credits used to satisfy the MCCCD Associate in Arts, Fine Arts - Theatre may apply to university graduation requirements of the university major for which the degree is designed. Information regarding the articulation of the degree with majors at the Arizona public universities can be accessed via the following website: **www. aztransfer.com**

Academic Policies that Govern the Associate in Arts, Fine Arts - Theatre Degree

- Completion of the Associate in Arts, Fine Arts - Theatre and the AGEC-A provides for exemption from Arizona public university admission requirements for Arizona residents who have a minimum Grade Point Average of 2.0 on a 4.0=A scale and a minimum 2.5 on a 4.0=A scale for non-residents.

- The graduation policies within the general catalog must be satisfied for completion of the Associate in Arts, Fine Arts - Theatre degree.

- A minimum of 60 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions.

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- The General Education Requirements for AGEC-A may be completed in 35 semester credits with the following stipulations:
  o Courses can satisfy a Core Area and one or two Awareness Areas simultaneously
  o A course cannot be used to satisfy more than one Core Area

- General Education Courses can satisfy multiple areas within the degree simultaneously (AGEC-A Core Area, AGEC Awareness Area, MCCCD Additional Requirements, or lower-division courses applicable to the major).

- Effective Fall 2000, the course evaluation and/or general education designation as listed in the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS), is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Students do have the option to petition for general education evaluations and/or general education designations upon transfer.

- Courses completed at one of the Maricopa Community Colleges to meet AGEC-A requirements must be listed in the Course Equivalency Guide within the Arizona Course Applicability System as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities. The course's evaluation and/or general education designation is valid for the term in which the student is awarded credit on the transcript. See the list titled <u>MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S</u> for specific course information via the following website: **www. maricopa.edu/academic/ccta/**

- Courses completed at one of the Maricopa Community Colleges to meet the General Electives requirement must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

- Courses transferred from another regionally accredited institution to one of the Maricopa Community Colleges will be evaluated by the college for inclusion in the AGEC-A or Associate in Arts, Fine Arts - Theatre Degree.

- Courses and their modular equivalents will satisfy AGEC-A and Associate in Arts, Fine Arts - Theatre requirements.

- If a course is cross-referenced with one or more other courses, then only one of the cross-referenced courses will be accepted to meet requirements.

- Courses completed at one of the Maricopa Community Colleges to satisfy Common Courses must be transferable as elective or better to the universities that have the shared majors listed on a Common Course Matrix. A shared major is a university degree program that has similar academic preparation to one or more degree programs at other Arizona public universities as listed on the Common Course Matrices. For appropriate course selection, students should consult with an advisor.

Degree Requirements
The 60-64 semester credits required for the Associate in Arts, Fine Arts -Theatre follow. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC-A, AGEC-B, and/or AGEC-S for specific course information via the following website: **www.maricopa.edu/academic/ccta/** This list identifies the courses in alpha-order by prefix as well as the Core Areas and Awareness Areas where the course will apply. For purposes of clarifying requirements in the Mathematics and Natural Sciences areas on the list and the AGEC requirements, an A, B, and/or S character may follow the [MA], [SQ], [SG] general education designations and refers to the specific AGEC.

I.   **MCCCD General Education**
     The MCCCD General Education includes two areas: MCCCD AGEC-A and MCCCD Additional Requirements.
     MCCCD AGEC-A

1.   **Core Areas:**   **Credits: 35**

     a.   **First-Year Composition (FYC)**   **6**

     b.   **Literacy and Critical Inquiry [L]**
          THE220 Modern Drama   3

     c.   **Mathematical Studies [MA/CS]**   **6**
          To complete the Mathematical Studies requirement, select one course to satisfy Mathematics [MA] A and a second course from Computer/Statistics/Quantitative Applications [CS].
          1)   Mathematics [MA] A (3 credits)
               Select a course in college mathematics or college algebra or pre-calculus or any other mathematics course for which college algebra is a prerequisite. AND
          2)   Computer/Statistics/Quantitative Applications [CS] (3 credits)

     d.   **Humanities and Fine Arts [HU]**   **6**
          Students are encouraged to choose course work from more than one discipline for a total of six semester credits. Select the following:
          THE205 Introduction to Cinema   3

     e.   **Social and Behavioral Sciences [SB]**   **6**
          Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

     f.   **Natural Sciences [SQ/SG]**   **8**
          To complete the Natural Sciences requirement: Select four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of eight (8) semester credits, OR eight (8) semester credits of [SQ]. Students cannot take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.

          The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course

Applicability System (AZCAS) for information on equivalencies.

2.   **Awareness Areas:**   **0**
     Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
          Cultural Diversity in the United States [C] AND
          Global Awareness [G] OR
          Historical Awareness [H]

MCCCD Additional Requirements: **Credits: 0-6**
Students must satisfy Oral Communication and Critical Reading areas. However, it is not necessary for students to exceed the thirty-five semester credits required in order to complete the MCCCD Additional Requirements because courses can satisfy a Core Area and MCCCD Additional Requirements simultaneously. Therefore no additional semester credits are required to satisfy Oral Communication and Critical Reading.

a.   **Oral Communication**   **3**
     A total of three (3) semester credits is required for Oral Communication. However, if students select a communication course that satisfies both the Oral Communication area and an area within the Core, then the Oral Communication requirement has been satisfied and additional electives may be taken.

     Select from the following options:
     COM100 [SB] (3 credits) OR
     COM100AA & COM100AB & COM100AC [SB] (3 credits) OR
     COM110 [SB] (3 credits) OR
     COM110AA & COM110AB & COM110AC [SB] (3 credits) OR
     COM225 [L] (3 credits) OR
     COM230 [SB] (3 credits)

b.   **Critical Reading**   **3**
     A total of three (3) semester credits is required for the Critical Reading area. However, if students complete CRE 101 and apply it to AGEC-A Core Requirements or if the students demonstrate proficiency through assessment, then the Critical Reading requirement has been satisfied.

     Select from the following options to complete 3 credits:
     CRE101 [L] (3 credits) **OR**
     equivalent as indicated by assessment

II. **Fine Arts Requirements – Theatre**   **25-29**
     A minimum of 25 credits are required to satisfy the Fine Arts Requirements – Theatre.

     Foundations: **13**
     Select the following
     THE111   Introduction to Theatre   3
     THP112   Acting I   3

THP115	Theatre Makeup	3
THP201AA	Theatre Production I OR	
THP201AB	Theatre Production II	1
THP213	Introduction to Technical Theatre	3

Restricted Electives: **Credits: 12-16**

Students may choose from the following courses to specialize in Acting, Technical Theatre, Teacher Education, or Cinema. Students should consult with the theatre advisor for the restricted electives recommended for each specialization track.

Select from the following options to complete a minimum of 12 semester credits: Credits

HUM/THE206	Introduction to Television Arts	3
HUM/THE210	Contemporary Cinema	3
THE118	Playwriting	3
THP120AA	Audition Techniques: Prepared Monologue	1
THP120AB	Audition Techniques: Cold Readings	1
THP130	Stage Combat OR	
THP131	Stage Movement	3
THP210	Acting: TV/Film	3
THP211	Creative Drama	3
THP212	Acting II	3
THP214	Directing Techniques	3
THP216	Beginning Stage Lighting	3
THP217	Introduction to Design Scenography	3
THP219	Introduction to Puppetry	3
THP267	Painting Techniques for Film, TV and Theatre	3
THP271	Voice and Diction	3

Associate in Arts, Fine Arts -
Theatre Total Credits: 60-64

Associate in Business (ABUS) Degree - General Requirements (GR)

Description

The Maricopa County Community College District Associate in Business General Requirements (ABus GR) degree requires a total of 62-63 semester credits for the program of study. The degree has three major components:

I. MCCCD General Education, which includes Arizona General Education Curriculum for Business (AGEC-B),
II. Common Lower Division Program Requirements,
III. General Electives.

Purpose of the Degree

The ABus GR degree is designed for students who plan to transfer to Arizona's public universities into majors that articulate with the Associate in Business General Requirements pathway and for students who plan to complete lower division course work toward a baccalaureate program at other degree granting institutions. All business majors except Accountancy and Computer Information Systems should follow the ABus GR pathway. Accountancy majors should follow the Transfer Guide (TG-XR) pathway. Computer Information Systems majors should follow the Associate in Business Special Requirements pathway.

Generally, the degree transfers as a block without loss of credit to Arizona's public universities and other institutions with district-wide articulation agreements. In most cases, courses used to satisfy the MCCCD Associate in Business General Requirements will apply to university graduation requirements of the university major for which the ABus GR was designed.

Academic Policies that Govern the Associate in Business General Requirements Degree:

- Requires 62-63 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions;

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- Uses the following policies to help students complete the required Core and Awareness Areas in AGEC B without exceeding the 35 semester credits
  o Courses can satisfy a Core Area and one or two Awareness Areas simultaneously.
  o A course cannot be used to satisfy more than one Core Area requirement.

- Uses the following policies to help students complete the program requirements at a minimum of 62 semester credits but not more than 63 semester credits:

- Courses can satisfy multiple areas within the degree simultaneously (AGEC B Core Area, AGEC B Awareness Area, and/or Common Lower Division Program Requirements).

- Follows the general education policy below:
  General Education Designations (example: (FYC), [SB], [HU], etc.) Effective Fall 2000 the course evaluation and/or general education designation as listed in the Arizona CEG (Course Equivalency Guide) within the Arizona Course Applicability System (AZCAS) is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Given that curriculum is dynamic at both MCCCD and the institutions to which MCCCD students transfer, students have the option to petition for general education evaluations and/or general education designations.

- Requires courses that transfer as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities according to the Arizona Course Equivalency Guide (CEG) within the Arizona Course Applicability System (AZCAS). The course evaluation and/or general education designation as listed in AZCAS is valid for the term in which the student is awarded credit on the transcript.

- Follows the graduation policies within the general catalog.

- Includes both courses and their modular equivalents, either the course or the modular equivalents will satisfy the Associate in Business General Requirements.

- Accepts one of the courses that is cross-referenced with other courses.

- Provides for exemption from Arizona university admission requirements for students who complete the ABus GR degree from a regionally accredited post-secondary institution with a minimum 2.0 on a 4.0=A scale for Arizona residents and a minimum 2.5 on a 4.0=A scale for non-residents.

Degree Requirements

The 62-63 semester credits required for the Associate in Business General Requirements follow. See the list entitled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC A, AGEC B and/or AGEC S for specific course information via the following website: **www.maricopa. edu/academic/ccta/**
  - Click on page labeled Curriculum
  - Select Matrix of Courses that Can be Used to Satisfy MCCCD AGEC A, B and/or S.

The list identifies the courses in alpha-order by prefix as well as the different Core Areas and Awareness Areas where the course will apply. When selecting Mathematical Studies and Natural Sciences options, select from the appropriate AGEC A, B, or S list.

I.   **MCCCD General Education**   Credits

   A.   MCCCD AGEC B

     1. Core Areas: 35

        a.   **First-Year Composition (FYC)**   6

        b.   **Literacy and Critical Inquiry [L]**   3

        c.   **Mathematical Studies [MA/CS]**   6
To complete the Mathematical Studies requirement select one course to satisfy Mathematics [MA] B and a second course from Computer/Statistics/ Quantitative Applications [CS].
1)   Mathematics [MA] B (3 credits)
       MAT212, Brief Calculus, or a higher level mathematics course AND
2)   Computers/Statistics/Quantitative Applications) [CS] (3 credits)
       CIS105 [CS] Survey of Computer Information Systems

        d.   **Humanities and Fine Arts [HU]**   6
Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

        e.   **Social and Behavioral Sciences [SB]**   6
Students are encouraged to choose course work from more than one discipline for a total of six semester credits.

        f.   **Natural Sciences [SQ/SG]**   8
To complete the Natural Sciences requirement: Select four (4) semester credits of [SQ] and four (4) semester credits of [SG] for a total of (8) semester credits, OR eight (8) semester credits of [SQ]. Students cannot take eight (8) semester credits of [SG] to meet the Natural Sciences requirement.
The lecture course(s) selected for Natural Sciences must include or be accompanied by the corresponding laboratory course. The lecture and corresponding laboratory course(s) may carry separate credit. Students should consult with an advisor for appropriate course selection. Students should also access the AZ Course Equivalency Guide (CEG) within the AZ Course Applicability System (AZCAS) for information on equivalencies.

     2. Awareness Areas
Students must satisfy two Awareness Areas: Cultural Diversity in the United States [C] and either Global Awareness [G] or Historical Awareness [H]. However, it is not necessary for students to exceed thirty-five semester credits to complete the Awareness Areas because courses can satisfy a Core Area and one or two Awareness Areas simultaneously. Therefore no additional semester credits are required to satisfy the two Awareness Areas.
       Cultural Diversity in the United States [C] AND
       Global Awareness [G] OR
       Historical Awareness [H]

II. **Common Lower Division Program Requirements:**   27-28
A total of 27-28 credits are required to satisfy the Common Lower Division Program Requirements. However, if students select courses that simultaneously satisfy multiple areas of the degree, then the number of semester credits required for Common Lower Division Program Requirements is reduced. Additional semester credits may be required in General Electives to complete the minimum 62-63 total program semester credits.
Complete the following:
Accounting:
*ACC111   Accounting Principles I AND
ACC230   Uses of Accounting Information I AND
ACC240   Uses of Accounting Information II OR
**ACC211   Financial Accounting AND
ACC212   Managerial Accounting   6-7
*MCCCD ACC250 or ACC211 may be taken in lieu of ACC111
**MCCCD ACC111 and ACC112 together are equivalent to ACC211
ECN211 [SB] Macroeconomic Principles   3
ECN212 [SB] Microeconomic Principles   3
GBS205   Legal, Ethical, Regulatory Issues in Business   3
GBS221 [CS] Business Statistics   3

Quantitative Methods: 3
GBS220   Quantitative Methods in Business OR
*MAT217   Mathematical Analysis for Business OR
*MAT218   Mathematical Analysis for Business
*Students planning to attend ASU W.P. Carey will be required to take MAT217 or MAT218

Business Electives: 6
Select from the following options:
CIS114DE   Excel Spreadsheet
CIS133DA   Internet/Web Development Level I
CIS159 [CS] Visual Basic Programming I
CIS162AD   C#: Level I
GBS151   Introduction to Business
GBS233 [L]   Business Communication
**GBS 220   Quantitative Methods in Business
GBS110 OR   Human Relations in Business and Industry
MGT251   Human Relations in Business
IBS101   Introduction to International Business
MGT253   Owning and Operating a Small Business
REA179   Real Estate Principles I
REA180   Real Estate Principles II
MKT271   Principles of Marketing
SBU200   Society and Business
**If course used to satisfy Common Lower Division Program requirements, it can not be used to satisfy Business Electives.

III. **General Electives**
Select courses to complete a minimum of 62 semester credits but no more than a total of 63 semester credits. General Electives semester credits may be necessary if courses selected for the degree satisfy multiple areas. For appropriate course selection, students should consult an advisor.

All courses used to satisfy electives must be transferable to the university or universities to which the student plans to transfer, as elective credit or better. For appropriate course selection, students should consult with an advisor.

ABus GR Degree Total Credits: **62-63**

Associate in Business (ABUS) Degree - Special Requirements (SR)

Description
The Maricopa County Community College District Associate in Business, Special Requirements (ABus SR) degree requires a total of 62-63 semester credits for the program of study. The degree has three major components:

I.   MCCCD General Education which includes the Arizona General Education Curriculum for Business (AGEC B),
II. Common Lower Division Program Requirements,
III. General Electives.

Purpose of the Degree
The ABus SR degree is designed for Computer Information Systems majors who plan to transfer to Arizona's public universities and for students who plan to complete lower division course work toward a baccalaureate program at other degree granting institutions. Currently the pathway for accountancy majors is a Transfer Guide Pathway (TG-XR). The Associate in Business General Requirements (ABus GR) is designed for all other business majors. Additional information on academic majors at the Arizona public universities can be accessed via the following web site: **www.aztransfer.com/**

Generally, the degree transfers as a block without loss of credit to Arizona's public universities and other institutions with district-wide articulation agreements. In most cases, courses used to satisfy the MCCCD Associate in Business Special Requirements may apply to university graduation requirements of the university major for which the ABus SR was designed.

Academic Policies that Govern the Associate in Business Special Requirements Degree:

- Requires 62-63 semester credits in courses numbered 100 and above to be completed with a grade of "C" or better. Credit units transferred from outside of the district need to be at a grade of "C" or better. A grade of "C" equals 2.0 on a 4.0 grading scale or equivalent. On an exception basis, P-grades may be allowed in the AGEC for credit transferred if documentation collected by the community college indicates that the P-grade issued was the only option for the student and the P-grade is a "C" or better. The P-grade exception does not apply to credits awarded by AGEC granting/receiving institutions;

- Credit received through prior learning assessment or credit by evaluation is transferable within the Maricopa Community Colleges but is not necessarily transferable to other colleges and universities. No more than 20 semester credit hours may be applied toward AGEC.

- Uses the following policies to help students complete the required Core and Awareness Areas in AGEC B without exceeding the 35 semester credits
  - o   Courses can satisfy a Core Area and one or two Awareness Areas simultaneously.
  - o   A course cannot be used to satisfy more than one Core Area requirement.

- Uses the following policy to help students complete the program requirements at a minimum of 62 semester credits but not more than 63 semester credits:

Courses can satisfy multiple areas within the degree simultaneously (AGEC B Core Area, AGEC B Awareness Area, and/or Common Lower Division Program Requirements).

- Follows the general education policy below:
  General Education Designations (example: (FYC), [SB], [HU], etc.)
  Effective Fall 2000 the course evaluation and/or general education designation, as listed in the Arizona CEG (Course Equivalency Guide) within the Arizona Course Applicability System (AZCAS) is valid for the term in which the student is awarded credit on the transcript. A course evaluation and/or general education designation may be subject to change. Given that curriculum is dynamic at both MCCCD and the institutions to which MCCCD students transfer, students have the option to petition for course evaluations and/or general education designations.

- Requires courses that transfer as an equivalent course, departmental elective credit (XXXXDEC), or general elective credit (Elective) at all Arizona public universities according to the Arizona Course Equivalency Guide (CEG). The course evaluation and/or general education designation as listed in AZCAS is valid for the term in which the student is awarded credit on the transcript.

- Follows the graduation policies within the general catalog.

- Includes both courses and their modular equivalents, either the course or the modular equivalents will satisfy the Associate in Business Special Requirements.

- Accepts one of the courses that is cross-referenced with other courses.

- Provides for exemption from Arizona university admission requirements for students who complete the ABus SR degree from a regionally accredited post-secondary institution with a minimum 2.0 on a 4.0=A scale for Arizona residents and a minimum 2.5 on a 4.0=A scale for non-residents.

Degree Requirements
The 62-63 semester credits required for the Associate in Business Special Requirements follow. See the list titled MCCCD Courses that Can be Used to Satisfy MCCCD AGEC A, AGEC B and/or AGEC S for specific course information via the following website: **www.maricopa.edu/academic/ccta/**

- Click on page labeled Curriculum
- Select Matrix of Courses that Can be Used to Satisfy MCCCD AGEC A, B and/or S.

The list identifies the courses in alpha-order by prefix as well as the different Core Areas and Awareness Areas where the course will apply. When selecting Mathematical Studies and Natural Sciences options, select from the appropriate AGEC A, B, or S list.

I. **MCCCD General Education**   Credits

A. MCCCD AGEC B

  1. **Core Areas:**   35

    a. **First-Year Composition (FYC)**   6

    b. **Literacy and Critical Inquiry [L]**   3

    c. **Mathematical Studies [MA/CS]**   6
        To complete the Mathematical Studies requirement
        select one course to satisfy the Mathematics [MA]
        B and a second course from Computer/Statistics/
        Quantitative Applications [CS]
        1) Mathematics [MA] B (3 credits)
            MAT212, Brief Calculus, or a higher level
            mathematics course AND
        2) Computer/Statistics/Quantitative
            Applications [CS]
            CIS105 [CS] Survey of Computer
            Information Systems

    d. **Humanities and Fine Arts [HU]**   6
        Students are encouraged to choose course work
        from more than one discipline for a total of six
        semester credits.

    e. **Social and Behavioral Sciences [SB]** 6
        Students are encouraged to choose course work
        from more than one discipline for a total of six
        semester credits

    f. **Natural Sciences [SQ/SG]**   8
        To complete the Natural Sciences requirement:
        Select four (4) semester credits of [SQ] and four
        (4) semester credits of [SG] for a total of eight (8)
        semester credits, OR eight (8) semester credits
        of [SQ]. Students cannot take eight (8) semester
        credits of [SG] to meet the Natural Sciences
        requirement.

        The lecture course(s) selected for Natural
        Sciences must include or be accompanied by the
        corresponding laboratory course. The lecture
        and corresponding laboratory course(s) may
        carry separate credit. Students should consult
        with an advisor for appropriate course selection.
        Students should also access the AZ Course
        Equivalency Guide (CEG) within the AZ Course
        Applicability System (AZCAS) for information on
        equivalencies.

  2. **Awareness Areas:**
      Students must satisfy two Awareness Areas: Cultural
      Diversity in the United States [C] and either Global
      Awareness [G] or Historical Awareness [H]. However, it
      is not necessary for students to exceed thirty-five semester
      credits to complete the Awareness Areas because courses
      can satisfy a Core Area and one or two Awareness Areas
      simultaneously. Therefore no additional semester credits
      are required to satisfy the two Awareness Areas.
          Cultural Diversity in the United States [C] AND
          Global Awareness [G] OR
          Historical Awareness [H]

II. **Common Lower Division Program Requirements:**   27-28
     A total of 27-28 credits are required for the Common Lower
     Division Program Requirements. Common courses meeting
     general education areas are noted with the general education
     designations encased in brackets. Complete the following:
     Accounting:
     *ACC111   Accounting Principles I AND
     ACC230   Uses of Accounting Information I AND
     ACC240   Uses of Accounting Information II OR
     **ACC211   Financial Accounting AND
     ACC212   Managerial Accounting   6-7
     * MCCCD ACC250 or ACC211 may be taken in lieu of
          ACC111
     **MCCCD ACC111 and ACC112 together are equivalent to
          ACC211

     Programming I: 3
     CIS162AD   C#: Level I

     Programming II: 3
     CIS250   Management Information Systems
     GBS205   Legal, Ethical, and Regulatory Issues
                  in Business   3
     GBS221 [CS] Business Statistics   3
     ECN211 [SB] Macroeconomic Principles   3
     ECN212 [SB] Microeconomic Principles   3

     Quantitative Methods   3
     GBS220   Quantitative Methods in Business OR
     *MAT217   Mathematical Analysis for Business OR
     *MAT218   Mathematical Analysis for Business
     *Students planning to attend ASU W.P. Carey will be required to
     take MAT217 or MAT218

III. **General Electives**   0-6
      Select courses to complete a minimum of 62 semester credits but no
      more than a total of 63 semester credits for the program. General
      Electives semester credits may be necessary if courses selected for
      the degree satisfy multiple areas. For appropriate course selection,
      students should consult an advisor.

      All courses used to satisfy electives must be transferable to the
      university or universities to which the student plans to transfer, as
      elective credit or better. For appropriate course selection, students
      should consult with an advisor.

ABus SR Total Credits: 62-63

Academic Certificate (AC)

Purpose of the Academic Certificate (area of emphasis)

The Maricopa Community College District Academic Certificate (area of emphasis) is a defined and coherent program of study that is recommended for students who wish to gain additional expertise in an academic area. While this program of study can result in proficiency in specified skills and competencies, as well as mastery of knowledge, it is not designed to prepare someone for employment in a specific occupation. The content for an Academic Certificate (area of emphasis) may be derived from a variety of disciplines or it can be discipline specific. The Academic Certificate does not require a general studies component even though requirements of the certificate may include courses that currently meet specific general studies designations such as Humanities and Fine Arts, Social and Behavioral Sciences, etc.

Academic Policies that Govern the Academic Certificate (area of emphasis):

- Generally ranges from 12-39 credit hours in courses numbered 100 or above, although there is no minimum number of credit hours required for an Academic Certificate;

- Requires a cumulative GPA of 2.0 or better for completion;

- Follows the graduation policies within the general catalog;

- Accepts one of the courses that is cross-referenced with other courses;

- Includes both courses and their modular equivalents, either the course or the modular equivalents will satisfy the Academic Certificate requirements:

- Does not presume block transfer value. Consequently, in most cases the Academic Certificate should not be a subset of an existing transfer degree;

- May have admission criteria established by the college if and when appropriate;

- Is for the most part college specific.

Transferable Courses

ANTHROPOLOGY

Division: Liberal Arts
Chair: Yvette Garcia

Description: Anthropology is a multi-disciplinary humanistic science. The field includes a broad range of courses with topics including the theories of human origin, ethnic and minority relations, cultures and civilizations out of the past, tribal perspectives on the modern world, and much more. Students find anthropology courses to be enriching. Knowledge in the field of anthropology helps to sensitize students to a multi-cultural view of the world, and to understand the universal commonality of humanity. *Anthropology courses may satisfy the Social and Behavioral Science, General Science, Humanities, Cultural and Historical Awareness parts the General Education requirements for Associate degrees and are generally transferrable.*

BIOLOGY

Division: Math and Sciences
Chair: Dr. James Crimando

Description: Biology courses study living organisms and life processes; laboratories provide students the opportunity to participate directly in the scientific method of inquiry through a wide variety of hands-on laboratory experiences. A strong foundation in biological science is essential to persons who are pursuing career goals in Nursing and Health Sciences programs as well as those pursuing a variety of degree programs for various life-science majors. *Biology courses may satisfy the Natural Science part of the General Education requirements for the Associate degrees and are generally transferrable.*

CHEMISTRY

Division: Math and Sciences
Chair: Dr. James Crimando

Description: Chemistry courses study atomic and molecular structure, and the properties and reactions of matter; laboratory courses offer students the opportunity to participate directly in the scientific method of inquiry. Chemistry is very important to such fields as Nursing, Health Sciences and other technologies. *Chemistry courses may satisfy the Natural Science part of the General Education requirements for the Associate degrees and are generally transferrable.*

COMMUNICATION

Division: Liberal Arts
Chair: Yvette Garcia

Description: Communication skills in speech are important to students for a variety of personal and career-related goals; persons who speak well more often achieve their desired purpose through their abilities in organizing and presenting ideas in a clear, convincing manner. *Speech communication courses are generally transferable and may satisfy part of the General Education requirements for the Associate degrees and are generally transferrable*

ENGLISH

Division: Liberal Arts
Chair: Yvette Garcia

Description: English courses are important because communication skills are essential to all areas of human endeavor; society depends on accuracy in the uses of language and sensitivity to the impact of words on human relations. In English courses students learn how to organize their ideas into effective patterns of communication. Placement testing is required for all students taking English courses. English courses (ENG081, ENG091, ENG101, and ENG102) require an appropriate placement test score or successful completion of the prior level; for example, ENG 101 requires an appropriate placement test score or the successful completion of ENG091. *English courses are an essential part of the General Education requirements for the Associate degrees. Courses numbered 100 and above are generally transferable.*

HISTORY

Division: Liberal Arts
Chair: Yvette Garcia

Description: History, the record of human accomplishments and failures, is concerned with understanding the past and how it has affected the present; therefore, through the study of history, students may be better able to interpret the present and anticipate the future. The emphasis at GateWay is not to simply memorize names and dates, but to have a complete picture of the past. *History courses generally transfer to four-year institutions. Arizona History (HIS105), required for Arizona K-12 teaching certification, can be taken at the community college level. History courses may satisfy the Social and Behavioral Sciences part of the General Education requirements of the Associate degrees and are generally transferrable.*

HUMANITIES

Division: Liberal Arts
Chair: Yvette Garcia

Description: Humanities courses are a valuable introduction to the complexity and richness of human cultural achievements and are therefore a means by which students may more fully understand themselves and other people and come to enjoy the beauty of life more completely. *Humanities and English Humanities satisfy the Humanities part of the General Education requirement of the Associate degrees and are generally transferrable.*

MATHEMATICS

Division: Math and Sciences
Chair: Dr. James Crimando

Description: Mathematics is a key skill necessary to many occupational and academic areas, involving not only computational abilities but also logic and the ability to read and interpret mathematical data accurately. Mathematics courses comprise an important part of a pre-technical block of courses offered for students who wish to strengthen academic skills while beginning their occupational coursework. *Mathematics is an essential part of the General Education requirements of the Associate degrees, and most courses numbered 100 and above transfer to other college or university programs.*

PHYSICS

Division: Math and Sciences
Chair: Dr. James Crimando

Description: Physics courses study energy and matter and the interactions between them; laboratory courses offer students the opportunity to participate directly in the scientific method of inquiry. The knowledge of physics is important in Health, Technical and other Sciences. When enrolling, students should be certain to enroll for both the lecture and laboratory sections, where required, and plan their schedules accordingly. Knowledge of algebra is strongly recommended as a preparation for entering physics classes. *Physics courses are generally transferable, some as elective credit courses. Physics courses may satisfy the Natural Science part of the General Education requirements of the Associate degrees and are generally transferrable.*

SOCIAL WORK

Division: Liberal Arts
Chair: Yvette Garcia

Description: Social Work courses provide insight into many important social justice and inequality issues, as well as preparing students to working in a highly diverse world. Courses are designed to transfer into many disciplines at four-year State Universities, including the schools of Social Work. Students do not need to declare an intent to pursue Social Work to take these courses. *Social Work Courses may satisfy transfer requirements in Social and Behavioral Sciences, Cultural Awareness, and Historical Awareness. Social Work courses meet General Education requirements for Associate degrees and are generally transferrable.*

SOCIOLOGY

Division: Liberal Arts
Chair: Yvette Garcia

Description: Sociology courses help provide insight for students into how society functions, with a focus on the interrelationships of social groups. *Sociology courses may satisfy the Social and Behavioral Sciences part of the General Education requirements for Associate degrees and are generally transferable.*

SPANISH

Division: Liberal Arts
Chair: Yvette Garcia

Description: Spanish courses are valuable to students who work and live in the Southwest or expect to travel abroad; in addition, study of a foreign language is one of the best ways for a person to gain understanding of the grammatical structure of English and to broaden his or her perspective concerning the different ways by which human beings perceive and communicate reality. *Foreign language is required for admission and for some degrees at the university level and courses are generally transferable.*

WOMEN'S STUDIES

Division: Liberal Arts
Chair: Yvette Garcia

Description: Women's Studies course focus on women's experiences and perspectives, exploring topics such as history, culture, class, race, ethnicity, sexuality and gender in order to help bring about equality, understanding, and peace. These courses are culturally responsive to the diversity of one half of the world's people, their work, and their impact on multicultural societies. *Women's studies courses may satisfy part of the General Education requirements for Associate degrees and are generally transferrable.*

ACCOUNTING
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Accounting (23-26 Credits)

The Certificate of Completion (CCL) in Accounting is for students seeking to gain skills and knowledge in the field of accounting. Possible entry-level jobs for this program include accounting clerk, accounts payable/receivable clerk, claims clerk, credit clerk, full-charge bookkeeper, accounting intern, or comparable positions. An Associate in Applied Science (AAS) is also available.

Required Courses		23-26 Credits
ACC111	Accounting Principles I (3) AND	
ACC230+	Uses of Accounting Information I (3) AND	
ACC240+	Uses of Accounting Information II (3) OR	
ACC230+	Uses of Accounting Information I (3) AND	
ACC240+	Uses of Accounting Information II (3) AND	
ACC250	Introductory Accounting Lab (1) OR	
ACC111	Accounting Principles I (3) AND	
ACC112+	Accounting Principles II (3) AND	
ACC212+	Managerial Accounting (3) OR	
ACC211	Financial Accounting (3) AND	
ACC212+	Managerial Accounting (3)	6-9
ACC105	Payroll, Sales and Property Taxes	3
ACC115+	Computerized Accounting	2
CIS114DE	Excel Spreadsheet	3
CIS105	Survey of Computer Information Systems	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical and Regulatory Issues in Business	3

Associate in Applied Science Degree in Accounting (60-65 Credits)

The Associate in Applied Science (AAS) in Accounting is one of several options for students seeking to gain skills and knowledge in the field of accounting. Possible entry-level jobs for this program include accounting clerk, accounts payable/receivable clerk, claims clerk, credit clerk, full-charge bookkeeper, accounting intern, or comparable positions.

Program Prerequisites		3 Credits
CRE101+	College Critical Reading (3) OR	
	Equivalent as indicated by assessment.	3

Required Courses		29-32 Credits

Students must earn a grade of "C" or better in each course in the Required Courses area.

ACC111	Accounting Principles I (3) AND	
ACC230+	Uses of Accounting Information I (3) AND	
ACC240+	Uses of Accounting Information II (3) OR	
ACC230+	Uses of Accounting Information I (3) AND	
ACC240+	Uses of Accounting Information II (3) AND	
ACC250	Introductory Accounting Lab (1) OR	
ACC111	Accounting Principles I (3) AND	

ACC112+	Accounting Principles II (3) AND	
ACC212+	Managerial Accounting (3) OR	
ACC211	Financial Accounting (3) AND	
ACC212+	Managerial Accounting (3)	6-9
ACC105	Payroll, Sales and Property Taxes	3
ACC115+	Computerized Accounting	2
ACC121	Income Tax Preparation (3) OR	
ACC221+	Tax Accounting (3)	3
CIS114DE	Excel Spreadsheet	3
CIS105	Survey of Computer Information Systems	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical and Regulatory Issues in Business	3
GBS233+	Business Communication	3

Restricted Electives		9 Credits
ACC+++++	Any ACC Accounting course(s) except courses used to satisfy Required Courses area	9
CIS117DM	Microsoft Access: Database Management	3
GBS131	Business Calculations	3
GBS207	Business Law (General Corporate)	3
GBS220+	Quantitative Methods in Business	3

General Education Requirements		22-24 Credits
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Satisfactory completion of a higher level mathematics course	3-5
ECN211	Macroeconomic Principles (3) OR	
ECN212	Microeconomic Principles (3) OR	
SBU200	Society and Business (3)	3
Any general education course in the Oral Communication area		3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Natural Sciences area		4

ADMINISTRATIVE TECHNOLOGY
Associate in Applied Science Degree

Division: Business and Information Technologies
Chair: Patricia Edgar

Associate in Applied Science Degree in Administrative Technology (60 Credits)

The Associate of Applied Science (AAS) Degree in Administrative Technology is designed to give a student a well-rounded preparation for a career in an office environment in the public or private sector. The degree includes a wide range of business and computer skills and applications as well as general education.

Program Prerequisites		1 Credit
OAS101AA	Computer Typing I: Keyboard Mastery (1) OR	
OAS103AA+	Computer Typing: Skill Building I (1)	1

Required Courses		33 Credits
ACC111	Accounting Principles I	3
ACC115+	Computerized Accounting	2
BPC110	Computer Usage and Applications (3) OR	
CIS105	Survey of Computer Information Systems (3) OR	
CIS183AH	Microsoft Office (3) OR	
BPC/OAS130DK+	Beginning Word (1) AND	
CIS118AB	PowerPoint: Level I (1) AND	
CIS117AM	Database Management: Microsoft Access Level I (1)	3
CIS114DE	Excel Spreadsheet	3
BPC/OAS131DK+	Intermediate Word	1
ECN211	Macroeconomic Principles (3) OR	
ECN212	Microeconomic Principles (3)	3
GBS110	Human Relations in Business and Industry	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
OAS101AB+	Computer Typing I: Letters, Tables, and Reports	1
OAS101AC+	Computer Typing I: Production and Manuscripts	1
OAS108	Business English	3
OAS118	10-Key by Touch	1
TQM101	Quality Customer Service	3

Restricted Electives		5 Credits

Students should select 5 credits from the following prefixes:

ACC+++++	Any ACC course(s)
CIS+++++	Any CIS course(s)
ECN+++++	Any ECN course(s)
EPS+++++	Any EPS course(s)
GBS+++++	Any GBS course(s)
HSM+++++	Any HSM course(s)
IBS+++++	Any IBS course(s)
MGT+++++	Any MGT course(s)
MKT+++++	Any MKT course(s)
SBU+++++	Any SBU course(s)
SBS+++++	Any SBS course(s)
TQM+++++	Any TQM course(s)

General Education Requirements		22 Credits
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3)	3
CRE101+	Critical and Evaluative Reading I (3) OR	
	Equivalent by Assessment	3
ENG101+	First-Year Composition	3
ENG102+	First-Year Composition	3
MAT102+	Mathematical Concepts/Applications (3) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent by Assessment	3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Natural Science area		4

AIR CONDITIONING/ REFRIGERATION/FACILITIES

Certificates of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Air Conditioning/ Refrigeration/Facilities (46-48 Credits)

The Certificate of Completion (CCL) in Air Conditioning/Refrigeration/ Facilities program is designed to provide training in the areas of heating, ventilation, refrigeration and air conditioning (HVAC&R) systems, electricity, electronic controls and instrumentation, hydronics, electro-mechanical devices, and general repair. Students will acquire skills necessary to assess and solve problems quickly in emergency situations, based upon an understanding of regulatory guidelines.

Upon program completion, Air Conditioning/Refrigeration/Facilities technicians are employable in the semi-conductor and health industries. Graduates can also find employment in the refrigeration industry as HVAC&R technicians or building services technicians.

Required Courses		46-48 Credits
BPC110	Computer Usage and Applications	3
FAC/HVA101+	Refrigeration Applications and Components I	2
FAC/HVA101LL+	Refrigeration Applications and Components I Lab	1
FAC/HVA105+	Electricity for Industry	3
FAC/HVA105LL+	Electricity for Industry Lab	1
FAC/GTC/MIT/OSH106	Industrial Safety OR	
	Proof of OSHA 30 hour card	0-2
FAC115+	Motors, Controls and Wiring Diagrams	3
FAC115LL+	Motors, Controls and Wiring Diagrams Lab	1
FAC186+	Electro-Mechanical Devices	3
FAC210+	Facilities Air Conditioning Systems	3
FAC210LL+	Facilities Air Conditioning Systems Lab	1
FAC220+	Controls and Instrumentation	3
FAC220LL+	Controls and Instrumentation Lab	1
FAC235+	Commercial Air and Water Test/Balance	3
FAC235LL+	Commercial Air and Water Test/Balance Lab	1
HVA103+	Refrigeration Applications/Components II	2
HVA103LL+	Refrigeration Applications/Components II Lab	1
HVA112+	Heating and Air Conditioning	3
HVA112LL+	Heating and Air Conditioning Lab	1
HVA143	Load Calculation and Duct Design	3
HVA231	Codes	3
MAT103AA	Math for Industrial Applications I	2
MAT103AB+	Math for Industrial Applications II	2

Certificate of Completion in Residential and Light Commercial Air Conditioning (20-22 Credits)

The Certificate of Completion (CCL) in Residential and Light Commercial Air Conditioning program is designed to provide training in the areas of heating, ventilation, refrigeration and air conditioning (HVAC&R) systems, electricity, electronic controls and general repair. Students will acquire skills necessary to assess and solve problems quickly in emergency situations.

Upon program completion, air conditioning technicians are employable in the residential and light commercial air conditioning and refrigeration industry.

Required Courses		20-22 Credits
BPC110	Computer Usage and Applications	3
FAC/HVA101+	Refrigeration Applications and Components I	2
FAC/HVA101LL+	Refrigeration Applications and Components I Lab	1
FAC/GTC/MIT/OSH106	Industrial Safety OR Proof of OSHA 30 hour card	0-2
HVA103+	Refrigeration Applications and Components II	2
HVA103LL+	Refrigeration Applications and Components II Lab	1
FAC/HVA105+	Electricity for Industry	3
FAC/HVA105LL+	Electricity for Industry Lab	1
HVA112+	Heating and Air Conditioning	3
HVA112LL+	Heating and Air Conditioning Lab	1
HVA143	Load Calculation and Duct Design	3

Associate in Applied Science Degree in Air Conditioning/Refrigeration/Facilities (68-70 Credits)

The Associate in Applied Science (AAS) in Air Conditioning/Refrigeration/Facilities program is designed to provide training in the areas of heating, ventilation, refrigeration and air conditioning (HVAC&R) systems, electricity, electronic controls and instrumentation, hydronics, electro-mechanical devices, and general repair. Students will acquire skills necessary to assess and solve problems quickly in emergency situations, based upon an understanding of regulatory guidelines. The program provides students an opportunity to develop written and verbal communication skills through general education courses.

Upon program completion, Air Conditioning/Refrigeration/Facilities technicians are employable in the semi-conductor and health industries. Graduates can also find employment in the refrigeration industry as HVAC&R technicians or building services technicians.

Required Courses		46-48 Credits
BPC110	Computer Usage and Applications	3
FAC/HVA101+	Refrigeration Applications and Components I	2
FAC/HVA101LL+	Refrigeration Applications and Components I Lab	1
HVA/FAC105+	Electricity for Industry	3
HVA/FAC105LL+	Electricity for Industry Lab	1
FAC/GTC/MIT/OSH106	Industrial Safety OR Proof of OSHA 30 hour card	0-2
FAC115+	Motors, Controls and Wiring Diagrams	3
FAC115LL+	Motors, Controls and Wiring Diagrams Lab	1
FAC186+	Electro-Mechanical Devices	3
FAC210+	Facilities Air Conditioning Systems	3
FAC210LL+	Facilities Air Conditioning Systems Lab	1

FAC220+	Controls and Instrumentation	3
FAC220LL+	Controls and Instrumentation Lab	1
FAC235+	Commercial Air and Water Test and Balance	3
FAC235LL+	Commercial Air and Water Test and Balance Lab	1
HVA103+	Refrigeration Applications and Components II	2
HVA103LL+	Refrigeration Applications and Components II Lab	1
HVA112+	Heating and Air Conditioning	3
HVA112LL+	Heating and Air Conditioning Lab	1
HVA143	Load Calculation and Duct Design	3
HVA231	Codes	3
MAT103AA	Mathematics for Industrial Applications I	2
MAT103AB+	Mathematics for Industrial Applications II	2

General Education Requirements		22 Credits
COM100	Introduction to Human Communication	3
CRE111+	Critical Reading for Business and Industry OR Equivalent by Assessment	3
ENG101+	First-Year Composition	3
ENG111+	Technical and Professional Writing	3
ENH254+	Literature and Film (3) OR	
HUM251+	Ideas and Values in the Humanities (3)	3
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Lab (1) OR	
PHY101+	Introduction to Physics (4) OR	
PHY111+	General Physics I (4)	4
SOC101	Introduction to Sociology	3

AUTOMATION TECHNOLOGY

Certificates of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Automation Technology Level I (17 Credits)

The Certificate of Completion (CCL) in Automation Technology Level I program introduces the student to automated systems used by companies to produce a variety of products. The emphasis is on the student awareness of the many issues a company must deal with when employing automation and the issues related to control of the equipment.

Required Courses		17 Credits
ATP101	Introduction to Automated Systems and Robotics	2
ATP105	Engineering Documentation	2
ATP110	Basic Manufacturing Processes	2
CIS105	Survey of Computer Information Systems	3
COM100	Introduction to Human Communication	3
ENG101+	First Year Composition	3
FAC/GTC/MIT/OSH106	Industrial Safety	2

Certificate of Completion in Automation Technology Level II (15-17 Credits)

The Certificate of Completion (CCL) in Automation Technology Level II program allows students to be able to evaluate and troubleshoot minor system problems and contribute to their solution or correction. Companies may authorize these employees to perform specific repairs and adjustments. If there are major system problems, this person is expected to recognize the situation and report the technical information to the appropriate repair person.

Program Prerequisites		17 Credits
Certificate of Completion in Automation Technology Level I		17

Required Courses		15-17 Credits
ATP130	DC Circuit Analysis	2
ATP135	AC Circuit Analysis	2
ATP150	Fluid Power 1 - Hydraulics, Pneumatics, and Vacuum Concepts	2
ATP175	Introduction to Motors and Motor Controls	2
ATP180	PLC 1 - Introduction to Ladder Logic	2
ATP200+	Sensors and Measurement	2
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent or higher-level mathematics course	3-5

Certificate of Completion in Automation Technology Level III (10 Credits)

The Certificate of Completion (CCL) in Automation Technology Level III program allows students to be to lead the technical efforts to maintain, troubleshoot, and repair most of the faults that would occur routinely in an automated system. People at this level are usually familiar with all electrical, system controls, and mechanical aspects of the system and would support the company team in the day-to-day supervision of the technical and procedural activities related to the equipment.

Program Prerequisites		15-17 Credits
Certificate of Completion in Automation Technology Level II		15-17

Required Courses		10 Credits
ATP215+	Digital and Analog Circuits	2
ATP222+	Servo Systems	2
ATP290	Lean Techniques and Six Sigma	3
ENG111+	Technical and Professional Writing	3

Associate in Applied Science Degree in Automation Technology (64-68 Credits)

The Associate in Applied Science (AAS) in Automation Technology prepares students to work with a variety of automated electro-mechanical, product assembly, process control, and product distribution systems that use programmable controls and other methodologies to accomplish system management. These systems utilize, but are not limited to, robotic, mechanical, hydraulic, pneumatic, electronic, optical, and thermal devices. The Automation Technician will gain the skills through this program to define, integrate, install, program, and maintain complex control systems.

Required Courses		30 Credits
ATP101	Introduction to Automated Systems and Robotics	2
ATP105	Engineering Documentation	2
ATP110	Basic Manufacturing Processes	2
ATP130	DC Circuit Analysis	2
ATP135	AC Circuit Analysis	2
ATP150	Fluid Power 1 - Hydraulics, Pneumatics, and Vacuum Concepts	2
ATP175	Introduction to Motors and Motor Controls	2
ATP180	PLC 1 - Introduction to Ladder Logic	2
ATP200	Sensors and Measurement	2
ATP215	Digital and Analog Circuits	2
ATP222	Servo Systems	2
ATP290	Lean Techniques and Six Sigma	3
CIS105	Survey of Computer Information Systems	3
FAC/GTC/MIT/OSH106	Industrial Safety	2

Restricted Electives:		9-11 Credits

Students should select one track, and take the required electives therein.

Track 1 - Process Control Systems and Programming:		9 Credits
ATP160	PLC 2 - HMI Interfaces and Function Block Programming	2
ATP245	Introduction to Solid Modeling - Solidworks	3
ATP251	Fluid Power 2 - Automation Applications	2
ATP260	Automation System Integration 1	2

Track 2 - Electromechanical and Hybrid Systems		11 Credits
ATP235	CNC Programming	2
ATP245	Introduction to Solid Modeling - Solidworks	3
ATP251	Fluid Power 2 - Automation Applications	2
ATP260+	Automation System Integration 1	2
ATP265+	Automation System Integration 2	2

General Education Requirements		25-27 Credits
COM100	Interpersonal Communication	3
CRE101+	Critical and Evaluative Reading I (3) OR Equivalent as indicated by Assessment	3
ENG101+	First-Year Composition	3
ENG111+	Technical and Professional Writing (3) OR	
ENG102+	First-Year Composition (3) *(if ENG111 not available)*	3
MAT120+	Intermediate Algebra (3) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (5) OR Equivalent score on District Placement exam OR Satisfactory completion of a higher level mathematics course	3-5
SOC101	Introduction to Sociology	3
Any approved General Education course in Humanities and Fine Arts area		3
Any general education course in the Natural Sciences area		4

AUTOMOTIVE TECHNOLOGY

Certificates of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Air Conditioning and Electrical Accessories (12 Credits)

Students can obtain a Certificate of Completion by successfully completing the following courses with grade of "C" or better. This course grouping should prepare the students to enter the automotive air conditioning/electrical service areas of the industry.

Required Courses		12 Credits
AUT103AA	Automotive Electrical Systems	6
AUT107AA	Automotive Air Conditioning	3
AUT203	Electrical Accessories	3

Certificate of Completion in Automotive Drive Trains (12 Credits)

Students can obtain a Certificate of Completion by successfully completing the following courses with a grade of "C" or better. This course grouping should prepare the students to enter the transmission service area of automotive service.

Required Courses		12 Credits
AUT106AC	Engine Overhaul and Reconditioning: Heads and Valves	3
AUT110AA	Automotive Transmissions and Power Trains	3
AUT123	Automatic Transmissions	6

Certificate of Completion in Automotive Suspension, Steering and Brakes (12 Credits)

Students can obtain a Certificate of Completion by successfully completing the following courses with a grade of "C" or better. This course grouping should also prepare the students to enter the suspension, alignment, and brakes service areas of automotive service.

Required Courses		12 Credits
AUT108AA	Front-End Suspension, Steering and Alignment	6
AUT109AA	Automotive Brake Systems	3
AUT130	Automotive Quick Service	3

Certificate of Completion in Automotive Technology (48 Credits)

The Certificate of Completion (CCL) in Automotive Technology is designed to prepare individuals to work as technicians in new car dealerships. New technologies incorporated in the automotive industry require skills in all major components of automotive servicing. Individuals may select Nissan specific, Toyota specific or general dealership laboratory experiences as alternative for cooperative education.

Required Courses		42 Credits
AUT103AA	Automotive Electrical Systems	6
AUT104AA	Automotive Fuel Systems	3
AUT105AA	Engine Performance and Diagnosis	3
AUT106AC	Engine Overhaul and Reconditioning: Heads and Valves	3
AUT107AA	Automotive Air Conditioning	3
AUT108AA	Front End Suspension, Steering/Alignment	6
AUT109AA	Automotive Brake Systems	3
AUT110AA	Automotive Transmissions and Power Trains	3
AUT123AA	Automatic Transmissions	4
AUT130	Automotive Quick Service	3
AUT203	Electrical Accessories	3
AUT240	Hybrid Vehicle Overview	2

Restricted Electives		6 Credits
Students should select six (6) credits from the following courses:		
AUT101	Internal Combustion Engines Theory	3
AUT210+	Automotive Emission Systems	3
AUT233+	Computerized Engine Control Systems	3
AUT270AC+	Automotive Technology Internship	3
AUT296++	Any Cooperative Education course	2-4
AUT298AC	Special Projects	3

Certificate of Completion in Engine Performance and Diagnosis (15 Credits)

Students can obtain a Certificate of Completion by successfully completing the following courses with a grade of "C" or better. This course grouping should prepare the student to enter the automotive engine service area.

Required Courses		15 Credits
AUT103AA	Automotive Electrical Systems	6
AUT104AA	Automotive Fuel Systems	3
AUT105AA	Engine Performance and Diagnosis	3
AUT210+	Automotive Emission Systems (3) OR	
AUT233+	Computerized Engine Control Systems (3)	3

Associate in Applied Science Degree in Automotive Technology (65-68 Credits)

The Associate in Applied Science (AAS) in Automotive Technology program is designed to prepare students for employment as automotive technicians (mechanics). Instruction is given in both the theoretical and practical aspects of automotive operation, maintenance and service. Instruction includes directed systems (both conventional and electronic), brakes, air conditioning, automotive electricity, tune-up and emission control, suspension, and steering systems. Modern laboratory facilities, fully equipped with the latest equipment, provide students with excellent opportunities for pre-employment experience. The program is Master Certified in Automotive Service Excellence by National Automotive Technicians Education Foundation.

Required Courses		42 Credits
AUT103AA	Automotive Electrical Systems	6
AUT104AA	Automotive Fuel Systems	3
AUT105AA	Engine Performance and Diagnosis	3
AUT106AC	Engine Overhaul and Reconditioning: Heads and Valves	3
AUT107AA	Automotive Air Conditioning	3
AUT108AA	Front-End Suspension, Steering and Alignment	6

AUT109AA	Automotive Brake Systems	3
AUT110AA	Automotive Transmissions and Power Trains	3
AUT123AA	Automatic Transmissions	4
AUT130	Automotive Quick Service	3
AUT203	Electrical Accessories	3
AUT240	Hybrid Vehicle Overview	2

Restricted Electives   6 Credits
Students should select six (6) credits from the following courses:

AUT101	Internal Combustion Engines Theory	3
AUT210+	Automotive Emission Systems	3
AUT233+	Computerized Engine Control Systems	3
AUT270AC+	Automotive Technology Internship	3
AUT296++	Any Cooperative Education course.	2-4
AUT298AC	Special Projects	3

General Education Requirements   17-20 Credits

CRE101+	Critical and Evaluative Reading I (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	0-3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT102+	Mathematical Concepts/Applications (3) OR	
	Equivalent by Assessment	3

Any approved general education course in the Oral Communication area — 3

Any general education course in the Humanities and Fine Arts area — 2

Any general education course in the Social and Behavioral Sciences area — 3

HONDA - NISSAN - TOYOTA AUTOMOTIVE TECHNICIAN

Cooperative training programs are available with major import manufacturers and dealerships to train service technicians for the sophisticated computerized technology found in automobiles today. GateWay Community College offers a two-year Associate in Applied Science degree program that includes four, 16-week semesters on campus plus 24-28 weeks of paid work experience at a local dealership in Arizona or neighboring states. Current model vehicles, service manuals, test equipment and repair procedures are available to students. Enrollment requires pre-testing for basic skills and personal interviews.

HONDA PACT
Professional Automotive Career Training

NISSAN PRO CAP
Nissan Professional Cooperative Apprenticeship Program

TOYOTA T-TEN
Toyota Technical Education Network

BIOMEDICAL RESEARCH TECHNOLOGY
Associate of Applied Science
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Math and Sciences
Chair: Dr. James Crimando

Associate of Applied Science in Biomedical Research Technology (61-65 Credits)

The Associate in Applied Science (AAS) in Biomedical Research Technology program includes significant course work in both biology and chemistry. Additionally, it includes an emphasis in bio-safety, business and regulatory issues and a structured internship component that has been developed in partnership with Southeast Valley biomedical companies along with local educational institutions. The program is designed to provide students with a working knowledge of the field by focusing on both theory and application in lab settings, as well as consideration of current topics in biomedical research.

Program Prerequisites   9-11 Credits

ENG091+	Fundamental of Writing (3) OR	
	Appropriate English placement test score	3
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR	
	Satisfactory score on District placement exam	3-5
RDG091+	College Preparatory Reading (3) OR	
	Appropriate Reading placement test score OR	
	Permission of instructor	3

Required Courses   43 Credits

BIO181	General Biology (Majors) I	4
BIO205+	Microbiology (4) OR	
BIO220+	Biology of Microorganisms (4)	4
BIO211AA	Biotechnology Seminar: Biomedical Applications	1
BIO211AB+	Biotechnology Seminar: Laboratory Protocol	1
BIO211AE	Biotechnology Seminar: Business and Regulatory Issues	1
BIO212AB+	Biotechnology II (5) OR	
BIO212BA+	Cell Biotechnology (5)	5
BIO213	BioSafety	1
BIO215+	Biotechnology Internship	3
BIO247+	Applied Biosciences: Biotechnology	4
BIO212AA+	Biotechnology I (5) OR	
BIO245	Cellular and Molecular Biology (4)	4-5
CHM151+	General Chemistry I (3) AND	
CHM151LL+	General Chemistry I Laboratory (1) AND	
CHM130	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1) OR	
CHM152+	General Chemistry II (3) AND	
CHM152LL+	General Chemistry II Laboratory (1)	8
CHM230+	Fundamental Organic Chemistry	3
CHM230LL+	Fundamental Organic Chemistry Laboratory	1
CHM260+	Fundamental Biochemistry	3
CHM260LL+	Fundamental Biochemistry Laboratory	1
CSC180	Computing for Scientists, Engineers and Medical/Health Specialists (3) OR	
CSC283+	Bioinformatics and Scientific Computing (3)	3

General Education		18-21 Credits
COM100	Introduction to Human Communication (3) OR	
COM225+	Public Speaking (3) OR	
COM230+	Small Group Communication (3)	3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3)	6
CRE101+	College Critical Reading (3) OR	
	Equivalent as indicated assessment (0)	0-3
MAT122+	Intermediate Algebra (3) OR	
	Equivalent OR satisfactory completion of a higher level mathematics course	3
PHI/REL213	Medical and Bio-Ethics (3) OR	
HCR210+	Clinical Health Care Ethics (3)	3
Any approved General Education course in the Social and Behavioral Sciences area		3

BUSINESS TECHNOLOGY SPECIALIST
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Business Technology Specialist (22.5-23 Credits)
The Certificate of Completion (CCL) in Business Technology Specialist emphasizes training on word processing, spreadsheet, database, and presentation software for business purposes. Completion of this certificate program which has as a prerequisite completion of the Office Technology Certificate would qualify an individual for secretarial, administrative assistant, or executive assistant positions.

Required Courses		19.5-20 Credits
Certificate of Completion in Office Technology		18
BPC/OAS131DK+	Intermediate Word	1
CIS100	Internet: A Tool for Learning (0.5) OR	
CIS133AA	Internet/Web Development Level I-A (1)	0.5-1

Restricted Electives		3 Credits
BPC/CIS+++++	Any BPC/CIS prefix courses	3

CLINICAL RESEARCH ASSOCIATE
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Clinical Research Associate (13 Credits)
The Certificate of Completion (CCL) in Clinical Research Associate (CRA) program is an advanced career track certificate for Clinical Research Coordinators. It is designed to enhance the current Clinical Research Coordinator program (CRC) and to train CRCs and other clinical research professionals who are currently in the Industry to move into the CRA role. While the CRC typically works at research sites, hospitals, and research institutes, the CRA works within the Pharmaceutical, Biotechnology and Medical Device Industries.

This program offers courses focused on the fundamental competencies of a Clinical Research Associate, providing entry level courses that train individuals who wish to expand their coordinating or other medical background experience.

Program Prerequisites		3 Credits
CRA290+	Introduction to the Clinical Research Associate Role	3

Required Courses		13 Credits
CRA291+	Monitoring	4
CRA293+	Clinical Study Development	3
CRA295+	Ethics/Regulations	3
CRA297+	Clinical Trial Material & Device Accountability	3

CLINICAL RESEARCH COORDINATING
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Clinical Research Coordinating (16-29.5 Credits)
The Clinical Research Coordinating Certificate of Completion (CCL) is achievable within a 12-24 month period. Required coursework covers research study management, project activities, subject coordination, and regulatory documentation and administration. The program focus is on the achievement of behavioral competencies and technical skills for CRCs including: research site preparation, subject screening, enrollment, recruitment, and follow-up visits; maintenance and dispensing of drug supplies; completion of case report forms and regulatory documents; and the adherence to Good Clinical Practice guidelines.

The Clinical Research Coordinating program is taught in accordance with standards of the Society of Clinical Research Associates (SoCRA) and the Association of Clinical Research Professionals (ACRP) for

their nationally and internationally recognized CRC certification examinations. Course components such as research ethics and Institutional Review Board operations, are based on the standards and guidelines of the Public Responsibility in Medicine and Research (PRIMR) and the Applied Research Ethics National Association (ARENA).

Program Prerequisites   **4-17.5 Credits**
Students must earn a grade of "C" or better for all courses within the Program Prerequisites area.

Students must select one of the following 4 options:
Option 1:   **11 Credits**
A professional healthcare license OR certification OR registration AND two years work experience in a health care field AND

BIO160	Introduction to Human Anatomy and Physiology	4
CRC120+	Introduction to Clinical Research	4
MAT102+	Mathematical Concepts/Applications (3) OR Higher level mathematics course OR Equivalent	3

Option 2:   **11 Credits**
Permission of the program director based on evaluation of comparable work experience AND

BIO160	Introduction to Human Anatomy and Physiology	4
CRC120+	Introduction to Clinical Research	4
MAT102+	Mathematical Concepts/Applications (3) OR Higher level mathematics course OR Equivalent	3

Option 3:   **17.5 Credits**
Two years work experience in a health care field AND

BIO160	Introduction to Human Anatomy and Physiology	4
BPC/CIS+++++	Any 0.5 credit BPC/CIS course	0.5
CRC120+	Introduction to Clinical Research	4
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC145	Medical Terminology for Health Care Workers (3) OR	
HCC145AA	Medical Terminology for Health Care Workers I (1.0) AND	
HCC145AB+	Medical Terminology for Health Care Workers II (1.0) AND	
HCC145AC+	Medical Terminology for Health Care Workers III (1.0)	3
MAT102+	Mathematical Concepts/Applications (3) OR Higher level mathematics course	3

Option 4:   **4 Credits**
Permission of the program director based on evaluation of occupational and educational background AND

CRC120+	Introduction to Clinical Research	4

Required Courses   **12 Credits**

CRC200+	Legal and Regulatory Research Compliance	4
CRC210+	Research Design and Data Management	4
CRC250+	Clinical Research Site Management	4

COMPUTED TOMOGRAPHY
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Computed Tomography (11 Credits)
The Certificate of Completion (CCL) in Computed Tomography offers graduate Radiologic and graduate Nuclear Medicine Technologists the opportunity to complete both didactic coursework and clinical skills experience necessary to prepare to become eligible to sit for the professional registration test in this field. The program focuses on specific skills and knowledge necessary to become proficient in this field.

Program Prerequisites   **3 Credits**

DMI/ICE220+	Sectional Anatomy	3

Required Courses   **11 Credits**

ICE248+	Computed Tomography (CT) Sectional Anatomy	2
ICE263+	Physics and Instrumentation of Computed Tomography	3
ICE265+	Computed Tomography Procedure Protocols	3
ICE273+	Computed Tomography Pathology and Contrast	3

COMPUTER INFORMATION SYSTEMS
Certificate of Completion
Associated in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies:
Chair: Patricia Edgar

Certificate of Completion in Computer Information Systems   (21 Credits)
The Certificate of Completion (CCL) in Computer Information Systems program is designed to meet the needs of students who are planning to find employment using current computer applications. It is intended for students who may later want to pursue an Associate's Degree in Computer Information Systems, but who do not expect to go beyond the community college program. The courses include Survey of Computer Information Systems and a variety of operating systems, database management, and popular programming languages. An Associate in Applied Science (AAS) is also available.

Required Courses — 12 Credits

CIS133DA	Internet/Web Development Level I	3
CIS105	Survey of Computer Information Systems	3
CIS126DA	UNIX Operations System (3) OR	
CIS126DL	Linux Operating System (3) OR	
MST150	Microsoft Windows Professional (3) OR	
MST150VI	Microsoft Windows Vista Administration (3) OR	
MST150XP	Microsoft Windows XP Professional (3)	3
CIS150+	Programming Fundamentals (3) OR	
CIS150AB+	Object-Oriented Programming Fundamentals (3)	3

Restricted Electives — 9 Credits

CIS+++++	Any CIS Computer Information course(s) except courses used to Satisfy Required Courses area	9

Associated in Applied Science Degree in Computer Information Systems (61-64 Credits)

The Associate in Applied Science (AAS) degree in Computer Information Systems program is designed to prepare students who are planning to find employment using current computer applications. Courses include Survey of Computer Information Systems and a variety of operating systems, database management, and popular programming languages. A Certificate of Completion (CCL) is also available.

Program Prerequisites — 3 Credits

CRE101+	College Critical Reading I (3) OR Equivalent by Assessment	3

Required Courses — 27-28 Credits

ACC111	Accounting Principles I	3
CIS133DA	Internet/Web Development Level I	3
CIS105	Survey of Computer Information Systems	3
CIS126DA	UNIX Operations System (3) OR	
CIS126DL	Linux Operating System (3) OR	
MST150	Microsoft Windows Professional (3) OR	
MST150VI	Microsoft Windows Vista Administration (3) OR	
MST150XP	Microsoft Windows XP Professional (3)	3
CIS150+	Programming Fundamentals (3) OR	
CIS150AB+	Object-Oriented Programming Fundamentals (3)	3
CIS159+	Visual Basic Programming I (3) OR	
CIS162++	Any C Programming Level I course (3) OR	
CIS163AA+	Java Programming: Level I (3)	3
CIS190+	Introduction to Local Area Networks (3) OR	
MST140	Microsoft Networking Essentials (3) OR	
CNT140AA	Cisco Networking Fundamentals (4)	3-4
GBS151	Introduction to Business	3
GBS233+	Business Communication	3

Restricted Electives — 12 Credits

CIS+++++	Any CIS Computer Information course(s) except courses used to Satisfy Required Courses area.	12

General Education Requirements — 22-24 Credits

ECN211	Macroeconomic Principles (3) OR	
ECN212	Microeconomic Principles (3) OR	
SBU200	Society and Business	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR Satisfactory completion of a higher level mathematics course	3-5
	Any general education course in the Oral Communication area	3
	Any general education course in the Humanities and Fine Arts area	3
	Any general education course in the Natural Sciences area	4

DIAGNOSTIC MEDICAL SONOGRAPHY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Diagnostic Medical Sonography (63-64 Credits)

The Certificate of Completion (CCL) in Diagnostic Medical Sonography program is designed for students who wish to explore sonography as well as those who have made a career decision to seek certification from the American Registry of Diagnostic Medical Sonographers.

Program Prerequisites — 16-22 Credits
Successful completion of the following college courses with a minimum, cumulative GPA of 3.0:

BIO160	Introduction to Human Anatomy and Physiology	4
COM+++++	Any approved general education Oral Communication course	3
ENG101+	First-Year Composition	3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR Equivalent or higher level mathematics course	3-5
DMI105+	Fundamentals of Radiation Physics (3) OR	
PHY101+	Introduction to Physics (4) OR	
PHY111+	General Physics I (4)	3-4
HCC145	Medical Terminology for Health Care Workers (3) OR	
HCC146	Common Medical Terminology for Health Care Workers (2) OR Graduate of an allied health education program that is patient care related (0)	0-3

Required Courses — 63-64 Credits

DMI/ICE220+	Sectional Anatomy	3
DMS110+	Introduction to Diagnostic Sonography	3
DMS120+	Ultrasound Imaging: Abdominal Procedures	4
DMS130+	Ultrasound Imaging: OB/GYN Procedures	4
DMS140+	Ultrasound Case Studies: Part I	2
DMS145+	Clinical Pathology for Diagnostic Imaging	3
DMS150+	Sonographic Principles and Instrumentation	3
DMS155+	Clinical Practicum I	1
DMS161+	Clinical Practicum II-AA	1

DMS162+	Clinical Practicum II-AB	2
DMS163+	Clinical Practicum II-AC	3
DMS171+	Clinical Practicum III-AA	2
DMS172+	Clinical Practicum III-AB	2
DMS210+	Concepts of Vascular Imaging	3
DMS220+	High Risk Obstetric/Gynecology Sonography	1
DMS230+	Introduction to Echocardiograpy	1
DMS235+	Ultrasound Breast Imaging	1
DMS240+	Ultrasound Case Studies: Part II	2
DMS241+	Ultrasound Case Studies: Part III	2
DMS245+	Neurosonography	1
DMS250+	Ultrasound Anatomy	2
DMS261+	Clinical Practicum IV-AA	2
DMS262+	Clinical Practicum IV-AB	3
DMS270+	Clinical Practicum V-AA	1
DMS271+	Clinical Practicum V-AB	2
DMS272+	Clinical Practicum V-AC	2
DMS281+	Ultrasound Registry Preparation Seminar: Physics and Instrumentation (1) OR successful completion of the American Registry of Diagnostic Sonographers (ARDMS) Sonographic Principles and Instrumentation exam (SPI) (0)	0-1
DMS282+	Ultrasound Registry Preparation Seminar: Abdominal and Small Parts Imaging	1
DMS283+	Ultrasound Registry Preparation Seminar: Obstetrics, Gynecology, and Neonate	1
DMS284+	Ultrasound Registry Preparation: Vascular Imaging	1
DMS285+	Intermediate Vascular Technology	2
DMS286+	Advanced Vascular Technology	2

Associate in Applied Science Degree in Diagnostic Medical Sonography   (71-76 Credits)

The Associate of Applied Sciences (AAS) in Diagnostic Medical Sonography program is designed for students who wish to explore the field of sonography, as well, as those who have made a career decision to seek certification from the American Registry of Diagnostic Medical Sonographers (A.R.D.M.S.). Diagnostic medical sonographers are highly specialized members of the health care team who provide patient services using ultrasound under the direction of a physician. Sonographers provide care essential to diagnostic ultrasound imaging by operating equipment and performing examinations for medical diagnosis. Sonographers have an in-depth knowledge of physics, disease processes, physiology, cross-sectional anatomy, positioning and sonographic techniques necessary to create ultrasound images. Knowledge of darkroom techniques, equipment maintenance, record keeping and film processing are also part of the job.

Careers in the field of diagnostic sonography are found in hospitals, clinics, doctors' offices, and mobile imaging centers. Research, applications, teaching and marketing are available to sonographers who wish to explore careers in business or industry.

Program Prerequisites　　　　　　　16-22 Credits
Successful completion of the following college courses with a minimum, cumulative GPA of 3.0:

BIO160	Introduction to Human Anatomy and Physiology	4
COM+++++	Any approved general education Oral Communication course	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3

MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent or higher level mathematics course	3-5
PHY101+	Introduction to Physics (4) OR	
PHY111+	General Physics I (4) OR	
DMI105+	Fundamentals of Radiation Physics (3)	3-4
HCC145	Medical Terminology for Health Care Workers (3) OR	
HCC146	Common Medical Terminology for Health Care Workers (2) OR	
	Graduate of an allied health education program that is patient care related (0)	0-3

Required Courses　　　　　　　　　63-64 Credits

DMI/ICE220+	Sectional Anatomy	3
DMS110	Introduction to Diagnostic Sonography	3
DMS120+	Ultrasound Imaging: Abdominal Procedures	4
DMS130+	Ultrasound Imaging: OB/GYN Procedures	4
DMS140+	Ultrasound Case Studies: Part I	2
DMS145+	Clinical Pathology for Diagnostic Imaging	3
DMS150+	Sonographic Principles and Instrumentation	3
DMS155+	Clinical Practicum I	1
DMS161+	Clinical Practicum II-AA	1
DMS162+	Clinical Practicum II-AB	2
DMS163+	Clinical Practicum II-AC	3
DMS171+	Clinical Practicum III-AA	2
DMS172+	Clinical Practicum III-AB	2
DMS210+	Concepts of Vascular Imaging	3
DMS220+	High Risk Obstetric/Gynecology Sonography	1
DMS230+	Introduction to Echocardiography	1
DMS235+	Ultrasound Breast Imaging	1
DMS240+	Ultrasound Case Studies: Part II	2
DMS241+	Ultrasound Case Studies: Part III	2
DMS245+	Neurosonography	1
DMS250+	Ultrasound Anatomy	2
DMS261+	Clinical Practicum IV-AA	2
DMS262+	Clinical Practicum IV-AB	3
DMS270+	Clinical Practicum V-AA	1
DMS271+	Clinical Practicum V-AB	2
DMS272+	Clinical Practicum V-AC	2
DMS281+	Ultrasound Registry Preparation Seminar: Physics and Instrumentation (1) OR successful completion of the American Registry of Diagnostic Sonographers (ARDMS) Sonographic Principles and Instrumentation exam (SPI) (0)	0-1
DMS282+	Ultrasound Registry Preparation Seminar: Abdominal and Small Parts Imaging	1
DMS283+	Ultrasound Registry Preparation Seminar: Obstetrics, Gynecology, and Neonate	1
DMS284+	Ultrasound Registry Preparation: Vascular Imaging	1
DMS285+	Intermediate Vascular Technology	2
DMS286+	Advanced Vascular Technology	2

General Education Requirements   **8-12 Credits**

CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by assessment	0-3
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3)	3
Any general education course in the Humanities and Fine Arts area		2-3
Any general education course in the Social and Behavioral Sciences area		3

ELECTRICAL TECHNOLOGY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Electrical Technology (43 Credits)

To assist industry in maintaining a safe and efficient facility, the facility electrician must have specialized knowledge in electricity, refrigeration, solid state electronic controls and safety. Facility electricians work closely with plant administration, regulatory agencies, safety analysts and engineers to provide both long and short term planning to meet regulatory compliance, maintain a safe work environment and a cost controlled and efficient production schedule. A leading trade magazine indicates that industry will need at least two thousand additional electrical technicians by the year 2000. The certificate and associate degree programs were recommended and designed by a collaborative effort of the Electric League of Arizona and GateWay Community College. The Electric League, whose industry members include City of Phoenix, Honeywell Flight Systems, IPEC Planar and Salt River Project, endorse this program. Graduates of this program will find employment with many of the companies that are members of the Electric League.

Program Prerequisites
Completion of math ASSET test with a minimum score of 43 and permission of department.

Required Courses   **43 Credits**

ELC119	Concepts of Electricity and Electronics	3
ELC120	Solid State Fundamentals	3
ELC123	Residential Electrical Wiring and Codes	3
ELC124+	Industrial Electrical Wiring and Codes	3
ELC125+	Commercial Electrical Wiring and Codes	3
ELC144+	Basic Automated Systems Using Programmable Controllers	2
ELC162+	Electrical Codes and Inspection I	3
ELC163+	Electrical Codes and Inspection II	3
ELC164	Grounding and Bonding	3
ELC210	AC Machinery and DC Machinery	3
ELC217	Motor Controls	3
ELC218+	Variable Frequency Drives	3
ELE101+	Beginning Algebra for Technology	3
ELE105+	Algebra-Trigonometry for Technology	5

Associate in Applied Science Degree in Electrical Technology (70 Credits)

To assist industry in maintaining a safe and efficient facility, the facility electrician must have specialized knowledge in electricity, refrigeration, solid state electronic controls and safety. Facility electricians work closely with plant administration, regulatory agencies, safety analysts and engineers to provide both long and short term planning to meet regulatory compliance, maintain a safe work environment and a cost controlled and efficient production schedule. A leading trade magazine indicates that the industry will need at least two thousand additional electrical technicians by the year 2000. The certificate and associate degree programs were recommended and designed by a collaborative effort of the Electric League of Arizona and GateWay Community College. The Electric League, whose industry members include City of Phoenix, Honeywell Flight Systems, IPEC Planar and Salt River Project, endorse this program. Graduates of this program will find employment with many of the companies that are members of the Electric League.

Program Prerequisites
Completion of math ASSET test with a minimum score of 43 and permission of department.

Required Courses   **45 Credits**

CIS121AB	Microsoft Command Line Operations	1
ELC119	Concepts of Electricity and Electronics	3
ELC120	Solid State Fundamentals	3
ELC123	Residential Electrical Wiring and Codes	3
ELC124+	Industrial Electrical Wiring and Codes	3
ELC125+	Commercial Electrical Wiring and Codes	3
ELC144+	Basic Automated Systems Using Programmable Controllers	2
ELC162+	Electrical Codes and Inspection I	3
ELC163+	Electrical Codes and Inspection II	3
ELC164	Grounding and Bonding	3
ELC210	AC Machinery and DC Machinery	3
ELC217	Motor Controls	3
ELC218 +	Variable Frequency Drives	3
ELE101 +	Beginning Algebra for Technology	3
ELE105+	Algebra-Trigonometry for Technology	5
ELC298AA	Special Projects	1

General Education Requirements   **25 Credits**

CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1)	4
COM230	Small Group Communication	3
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	3
ENG101+	First-Year Composition	3
ENG111+	Technical and Professional Writing	3
HUM101	General Humanities	3
MAT122+	Intermediate Algebra (3) OR	
	Equivalent by Assessment	3
SOC101	Introduction to Sociology	3

ELECTRONEURODIAGNOSTICS
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Science
Chair: Edward Hoskins

Certificate of Completion in Electroneurodiagnostics (28 Credits)

The Certificate of Completion (CCL) in Electroneurodiagnostics program is achievable within a 12-month period. The curriculum is designed to prepare students to use electrical techniques to evaluate activity of the brain and spinal cord and to perform electroencephalograms (EEG's) in hospitals and other healthcare facilities. The program focuses on the general area of biomedical electronics with specific instruction in the theory and use of EEG instruments and factors influencing testing outcomes and reporting.

Program Prerequisites		9.5-15 Credits

Students must select Option 1 or Option 2:

Option 1:		13-15 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
HCC/EMT/RES109	CPR for Health Care Provider	0.5
HCC130	Fundamentals in Health Care Delivery	3
HCC146	Common Medical Terminology for Health Care Workers	2
HCC200+	Basic Client Care for Allied Health	0.5
MAT102+	Mathematical Concepts/Applications (3) OR	
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3)	3-5

Option 2:		9.5-11.5 Credits

Two years of documented work experience in a health care field AND

BIO160	Introduction to Human Anatomy and Physiology	4
HCC/EMT/RES109	CPR for Health Care Providers Practice and Testing	0.5
HCC146	Common Medical Terminology for Health Care Workers	2
MAT102+	Mathematical Concepts/Applications (3) OR	
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3)	3-5

Required Courses		28 Credits
EEG116+	Basic Electroneurodiagnostic Skills	4
EEG130+	Introduction to EEG	3
EEG200+	Intermediate EEG Skills-Clinical Rotation Lab	3
EEG201+	Intermediate EEG	4
EEG205+	Applied Evoked Potentials	3
EEG206+	Advanced EEG	3
EEG210+	Applied Neurophysiology	3
EEG211+	Advanced EEG Skills-Clinical Lab	3
HCE113	Biomedical Electronics I	2

ENVIRONMENTAL SCIENCE TECHNOLOGY
Certificate of Completion
Students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Environmental Science Technology (24 Credits)

The Certificate of Completion (CCL) is offered to students as a post-associate of applied sciences degree in GateWay's water treatment and facilities programs and/or to graduates of similar programs. The certificate of completion will prepare students to set-up, operate, and maintain water and heating ventilation and air conditioning (HVAC) and refrigeration systems in the highly technical environment of water treatment plants and HVAC and refrigeration facilities. Program content will focus on water treatment technologies and/or facilities systems technologies.

The bio-science research industry produces by-products as a result of its research. Technicians who maintain the facilities, air side, portable water and waste water, must be aware of the environment and how to control pressurized cabinets and outflow of waste products.

Program Prerequisites	70-78 Credits

Students must complete one of the following programs prior to enrolling in any of the courses listed under Required Courses area: Completion of Associate in Applied Science in Water Resources Technologies degree (69-77.5) OR Completion of Associate in Applied Science in Air Conditioning/Refrigeration/Facilities degree (68-70) OR Permission of Department.

Required Courses		24 Credits
BIO181	General Biology (Majors) I	4
BIO205+	Microbiology	4
CHM151+	General Chemistry I	3
CHM151LL+	General Chemistry I Laboratory	1
FAC250+	Maintaining Biological Laboratories	3
FAC/GTC/MIT/OSH106	Industrial Safety	2
WWM271+	Industrial Wastewater Treatment for Biotechnology	4
OSH275+	Control of Transmissible Pathogens	3

GAME TECHNOLOGY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Game Technology (28 Credits)

The Certificate of Completion (CCL) in Game Technology is a discipline that includes the development and management of dynamic environments for games and related visualization applications. The Certificate of Completion in Game Technology will help prepare students for entry-level career opportunities with studios, corporations, organizations, educational institutions, government agencies, advertising and entertainment industries that require visual and interactive content to support, enhance, entertain and/or market their product or service. Possible entry-level or internship positions leading to careers after completing this certificate program may include 3D Animator, Production Artist, 3D Modeler, Game Designer, Game Developer, or Multimedia Designer/Developer.

Required Courses   25 Credits
ADA/ART170+	Three-Dimensional Computer Design	3
ADA/ART/184+	Computer Animation	3
CIS105	Survey of Computer Information Systems	3
CIS107+	The Electronic Game Industry	3
CIS108+	Electronic Portfolio Development	1
CIS120DC	Flash: Digital Animation	3
CIS120DF	Computer Graphics: Adobe Photoshop (3) OR	
CIS120DG	Fireworks: Web Graphics	3
CIS130DA+	3D Studio Max: Modeling	3
CIS130DB+	3D Studio Max: Animation	3
CIS151+	Computer Game Development - Level I	3
CIS220DC+	Flash: Advanced Animation and ActionScript	3

Restricted Electives   3 Credits
CIS120DB	Computer Graphics: Adobe Illustrator	3
CIS150AB+	Object-Oriented Programming Fundamentals	3
CIS224	Project Management Microsoft Project for Windows	3
MTC/TCM120+	Introduction to Sound Design for Film and Video	3

Associate in Applied Science Degree in Game Technology (62 Credits)

The Associate in Applied Science (AAS) in Game Technology is a discipline that includes the development and management of dynamic environments for games and related visualization applications. The Associate of Applied Science in Game Technology will help prepare students for entry-level career opportunities with studios, corporations, organizations, educational institutions, government agencies, advertising and entertainment industries that require visual and interactive content to support, enhance entertain and/or market their product or service.

The curriculum brings together business concepts and game technology to prepare students for careers as Game Programmer, Environment Artist, Production Artist, Tools Programmer, Character Modeler, Character Animator, Game Designer, Game Developer, or Multimedia Designer/Developer.

Program Prerequisites   0-3 Credits
CRE101	College Critical Reading (3) OR	
	Equivalent as indicated by assessment	0-3

Required Courses   37 Credits
ART/ADA170+	Three-Dimensional Computer Design (3) OR	
CIS130DA+	3D Studio Max: Modeling (3)	3
ADA/ART/MMT184+	Computer Animation (3) OR	
CIS130DB	3D Studio Max: Animation (3)	3
CIS105	Survey of Computer Information Systems	3
CIS107+	The Electronic Game Industry	3
CIS108+	Electronic Portfolio Development	1
CIS120DC	Flash: Digital Animation	3
CIS120DF	Computer Graphics: Adobe Photoshop (3) OR	
CIS120DG	Fireworks: Web Graphics (3)	3
CIS150AB+	Object-Oriented Programming Fundamentals	3
CIS151+	Computer Game Development - Level I	3
CIS220DC+	Flash: Advanced Animation and ActionScript	3
CIS230DA+	3D Studio Max Materials	3
CIS251+	Computer Game Development - Level II	3
MMT216+	Multimedia Project Management (3) OR	
CIS224	Project Management Microsoft Project for Windows (3)	3

Restricted Electives
3 Credits
CIS120DB	Computer Graphics: Adobe Illustrator	3
CIS230DB+	3D Studio Max: Lighting and Rendering	3
CIS253+	Computer Game Development - Level III	3
MTC/TCM120+	Introduction to Sound Design for Film and Video	3

General Education Requirements   22-24 Credits
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Satisfactory completion of a higher level mathematics course	3-5
SBU200	Society and Business	3
Any general education course in the First-Year Composition area		6
Any general education course in the Oral Communication area		3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Natural Sciences area		4

GENERAL BUSINESS
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in General Business (21 Credits)

The Certificate of Completion (CCL) in General Business will provide business training for various entry-level positions in business. The courses include an introduction to business concepts, accounting and computer principles, and legal issues related to business. An Associate in Applied Science (AAS) is also available.

Required Courses   12 Credits

ACC111	Accounting Principles I	3
CIS105	Survey of Computer Information Systems	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical and Regulatory Issues in Business	3

Restricted Electives   9 Credits

ACC+++++	Any ACC Accounting prefixed courses not listed under the Required Courses area	1-9
GBS+++++	Any GBS General Business prefixed courses not listed under the Required Courses area	1-9
IBS+++++	Any IBS International Business prefixed courses	1-9
MGT+++++	Any MGT Management prefixed courses	1-9
MKT+++++	Any MKT Marketing prefixed courses	1-9
REA+++++	Any REA Real Estate prefixed courses	1-9
SBS+++++	Any SBS Small Business Management prefixed courses	1-9
CIS114DE	Excel Spreadsheet	3
CIS117DM	Microsoft Access: Database Management	3
CIS133DA	Internet/Web Development Level I	3

Associate in Applied Science Degree in General Business (61-63 Credits)

The Associate in Applied Science (AAS) in General Business program meets the needs of students who wish a broad overview of business and desire not to enroll in a specialized curriculum in business. The program is designed to acquaint students with major subject areas of business, to improve the student's business vocabulary, and to provide students with an understanding of influencing factors in business decision making and activities. In addition, this program could aid a student in recognizing a specific business field to be pursued in future studies. Although many courses will transfer to a four-year institution, some courses do not. This curriculum is not designed to meet the needs of students who wish to transfer to a four-year institution. A Certificate of Completion (CCL) is also available.

Program Prerequisites   3 Credits

CRE101+	College Critical Reading I (3) OR Equivalent by Assessment	3

Required Courses   21 Credits

ACC111	Accounting Principles I	3
CIS105	Survey of Computer Information Systems	3
GBS110	Human Relations in Business and Industry (3) OR	
MGT175	Business Organization and Management (3) OR	
MGT251	Human Relations in Business	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MKT271	Principles of Marketing	3

Restricted Electives   18 Credits

ACC+++++	Any ACC Accounting prefixed courses not listed under Required Courses area	1-18
CIS114DE	Excel Spreadsheet	3
CIS117DM	Microsoft Access: Database Management	3
CIS133DA	Internet/Web Development Level I	3
GBS+++++	Any GBS General Business course(s) except courses used to satisfy Required Courses area	1-18
IBS+++++	Any IBS International Business course(s)	1-18
MGT+++++	Any MGT Management course(s) except courses used to satisfy Required Courses area	1-18
MKT+++++	Any MKT Marketing course(s) except courses used to satisfy Required Courses area	1-18
REA+++++	Any REA Real Estate course(s)	1-18
SBS+++++	Any SBS Small Business Management course(s)	1-18

General Education Requirements   22-24 Credits

ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3)	3-5
ECN211	Macroeconomic Principles (3) OR	
ECN212	Microeconomic Principles (3) OR	
SBU200	Society and Business	3
Any general education course in the Communications area		3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Natural Science area		4

HEALTH SERVICES MANAGEMENT
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Health Services Management (12 Credits)

The Health Services Management Certificate and Degree Program prepare students to assume, or successfully function in leadership, supervisory and management positions in a health services setting. The health services supervisor must develop skills to be an effective leader and planner, capable of coaching and developing motivated and committed employees and employee teams.

Program Prerequisites   6 Credits
Students must select one of the following 4 options:
Option 1:   0 Credits
Currently credentialed in a health care discipline, OR

Option 2:   0 Credits
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District AND
one year of employment in a health services setting, OR

Option 3:   0 Credits
Two years experience in a related health care field/health services setting, OR

Option 4:   6 Credits
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in Health Care Setting (0.5)	3
HCC145	Medical Terminology for Health Care Workers	3

Required Courses   12 Credits
HSM122	Health Services Supervision	3
HSM125	Current Issues in Health Services Management	3
HSM222	Health Services Management	3
HSM226	Ethics and Legalities of Health Services Management	3

Associate in Applied Science Degree in Health Services Management (63-67 Credits)

The Associate in Applied Science (AAS) in Health Services Management program has two separate tracks. The Health Services Management track prepares students to become successful supervisors and managers in all types of varied health care settings. The Clinical Research track specifically prepares students to become successful managers and leaders in the clinical research setting. Both tracks focus on the development of skills to be an effective leader and planner, capable of directing, coaching and developing motivated employees and employee teams. The Health Services Management track includes an internship in a health services setting under the direction of an on-site mentor. The Clinical Research track includes an independent study opportunity in a research setting where the student will observe and interface with clinical research coordinators, site managers, project managers and investigators.

Program Prerequisites   0-4 Credits
Students must select one of the following 4 options:
Option 1:   0 Credits
Currently credentialed in a health care discipline, OR

Option II: 0 Credits
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District OR

Option III: 0 Credits
One year full time work experience and approval of the program director OR

Option IV: 4 Credits
Enrollment in or completion of Clinical Research Coordinating Certificate (5161) and permission of program director AND
| CRC120 | Introduction to Clinical Research | 4 |

Required Courses   31-36 Credits
Students who have been admitted into Option IV in the Prerequisites Area are not required to enroll in HCC145.
HSM122	Health Services Supervision	3
HSM125	Current Issues in Health Services Management	3
HSM222	Health Services Management	3
HSM226	Ethics and Legalities of Health Services Management	3
ACC111	Accounting Principles I	3
BPC/CIS+++++	Any two (2) credit BPC/CIS course	2
HCC146	Common Medical Terminology for Health Care Workers	2

Students must select one of two (2) tracks:
Track I: Health Services Management Emphasis   12 Credits
GBS233+	Business Communication	3
HSM207+	Health Service Management Internship	3
MGT276	Personnel/Human Resource Management	3
CSM/TQM101	Quality Customer Service	3

Track II: Clinical Research Coordinating Emphasis   17 Credits
For Track II students must complete, or be concurrently enrolled, in the Clinical Research Coordinating Certificate
CRC200+	Legal and Regulatory Research Compliance	4
CRC210+	Research Design and Data Management	4
CRC225+	Clinical Research Site Budget Process	2
CRC230+	Clinical Research Coordinator Independent Study *(CRC230 must be repeated three times)*	3
CRC250+	Clinical Research Site Management	4

Restricted Electives   6-7 Credits
Track I: 7 Credits
Students pursuing Health Services Management emphasis should consult with the department in the selection and approval of courses meeting Restricted Electives area.

Track II: 6 Credits
Students pursuing Clinical Research Coordinating emphasis should select six (6) credits from the following courses:
| CRC220+ | Basic Genetics and Clinical Research | 3 |
| CRC235+ | Introduction to Oriental Medicine and Research | 2 |

CRC240+	Research Ethics	3
CRC255+	Introduction to Medical Devices in Clinical Evaluation	2
CRC270+	Institutional Review Board in Clinical Research	3
CRC285+	Introduction to Oncology Research	3
CRC290+	Introduction to Clinical Research Associate	3

General Education Requirements   **25 Credits**

BIO160	Introduction to Human Anatomy and Physiology (4) OR	
BIO201	Human Anatomy and Physiology (4)	4
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3)	6
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication	3
CRE101+	College Critical Reading	3
MAT102+	Mathematical Concepts/Applications (3) OR Equivalent or higher level mathematics course	3
	Any general education course in the Humanities and Fine Arts course	3
	Any general education course in the Social and Behavioral Sciences course	3

HEALTH UNIT COORDINATING

Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Health Unit Coordinating (16-16.5 Credits)

The Certificate of Completion (CCL) in Health Unit Coordinating program focuses on the work involved at the nurses' station in health care facilities and the coordination of non-clinical activities related to patient care. Professional duties include transcribing processing doctors' orders, scheduling diagnostic tests and treatments for patients, managing the patients' paper and electronic charts managing unit supplies and equipment, and facilitation of workflow in the health care setting.

Program Prerequisites   **3 Credits**
HCC145, HCC145AC and HCC146 must be taken within the last 5 academic years.

HCC145	Medical Terminology for Health Care Workers (3) OR	
HCC145AC	Medical Terminology for Health Care Workers III (1) AND	
HCC146	Common Medical Terminology for Health Care Workers (2)	3

Required Courses   **16-16.5 Credits**

CIS128	Databases in Practice Management	3
HCC/RES109	CPR for the Health Care Provider (0.5) OR Proof of current Health Care Provider CPR Certification (0)	0-0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	

HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3

HUC111, HUC113, HUC114, HUC115 and HUC116 must be taken within the same semester. If any one of these five courses is not successfully completed, all need to be repeated.

HUC111+	Communication and Hospital Unit Management in Health Unit Coordinating	2
HUC113+	Health Unit Coordinator Procedures	4
HUC114+	Health Unit Coordinator Procedures - Lab	1
HUC115+	Health Unit Coordinator Clinical	2
HUC116+	Health Unit Coordinating Clinical Seminar	1

HOSPITAL CENTRAL SERVICE TECHNOLOGY

Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Hospital Central Service Technology (24-24.5 Credits)

The Certificate of Completion (CCL) in Hospital Central Service Technology program focuses on the types and names of instrumentation and equipment, decontamination of instrumentation, processing of instruments and a firm foundation in the process of sterilization of instrumentation. Students will have hands-on skill labs to learn techniques used for building instrument trays, wrapping surgical supplies and familiarizing themselves with care and handling of instrumentation. Clinical experience is arranged to give the student working experience in all of the practical areas of this department.

Students graduate with a certificate of completion that prepares them for employment in a hospital, clinic, veterinary hospital, out-patient hospital setting, endoscopy, or manufacturing companies of surgical supplies. This program will provide information for preparation of a post-graduate certification examination in the field of Hospital Central Service.

Program Prerequisites   **5-5.5 Credits**
Students must select Option I or Option II:
Option I: **0 Credits**
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District OR

Option II: **5-5.5 Credits**

HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (.05) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	

HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC/RES109	CPR for Health Care Provider OR	
	Proof of Current American Heart Association Health Care Provider CPR Certification (0)	0-0.5
HCC146	Common Medical Terminology for Health Care Workers	2

Required Courses		**19 Credits**

Students who have been admitted into Option II may take the program prerequisites concurrently with required courses with permission of department or division.

BPC101AA	Introduction to Computers I	1
HCS101AA+	Introduction to Hospital Central Service	7
HCS104AA	Basic Surgical Instrumentation for Hospital Central Service	1
HCS104AB	Specialty Surgical Instruments for Hospital Central Service	1
HCS110+	Packaging and Sterilization	4
HCS130+	Hospital Central Service Practicum	5

INDUSTRIAL DESIGN TECHNOLOGY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Industrial Design Technology: Design Specialist-SolidWorks (25 Credits)

The Certificate of Completion (CCL) in Industrial Design Technology: Design Specialist: SolidWorks prepares students for careers as technical assistants, engineering technicians or hands-on product designers. This expertise will allow employment in a variety of high tech product development and manufacturing companies. The program includes courses designed to provide students with a working knowledge in the field of product design, product development and rapid part manufacturing. Competency and technical expertise will be learned on industry specific three-dimensional 3D Solid Design software, 3D printers, and mechanical design simulation software. The core specialty of the program is hands-on experience with solid design and 3D printing.

Program Prerequisites		**0-4 Credits**
CIS121AE	Windows Operating System: Level I (1) OR	
	Equivalent experience to be determined by program director.	0-1
MET109	Machine Trades Print Reading (3) OR	
	One year direct work experience with Mechanical machine drawing OR	
	Satisfactory placement on departmental placement exam	0-3

Required Courses		**19 Credits**
MET112	Inspection Techniques	3
MET113	Applied Geometric Dimensioning and Tolerancing	3
MET231+	Manufacturing Processes and Materials	3
MET286AE+	Solid Design I: Part Modeling: SolidWorks	3
MET288AE+	Solid Design II: Advanced Part Modeling: SolidWorks	3
MET292AE+	Solid Design III: Detailing/GD&T/Assemblies/Kinematics: Solidworks	3
MET291AE+	Solid Design: Certified SolidWorks Associate Test Preparation: CSWA	1

Restricted Electives		**6 Credits**

Students should select six (6) credits from the following courses:

MET293AE+	Solid Design: Surface Modeling: SolidWorks	3
MET294AE+	Solid Design: Sheet Metal: SolidWorks	3
MET297AA+	Solid Design Internship: 3D Printing	3
MET297AB+	Solid Design Internship: 4 & 5 Axis CNC	3
MET297AC+	Solid Design Internship: Reverse Engineering	3
MET297AD+	Solid Design Internship: Welding Fabrication	3
MET297AE+	Solid Design Internship: Advanced Solid Design	3

Associate in Applied Science Degree in Industrial Design Technology (62-68 Credits)

The Associate of Applied Science (AAS) in Industrial Design Technology prepares students for careers as technical assistants, engineering technicians or hands-on product manufacturers. This expertise will allow employment in a variety of high tech product development and manufacturing companies. The program includes courses designed to provide students with a working knowledge in the field of product design, product development and rapid part production. Competency and technical expertise will be learned on industry specific three-dimensional (3D) Solid Design software, Computer Aided Manufacturing (CAM) software, 3D printers and Multi-Axis Computer Numerical Control (CNC) controlled machines. The core specialty of the program is hands-on experience with Computer Aided Design (CAD), CAM, CNC and 3D printing.

Program Prerequisites		**0-4 Credits**
CIS121AE	Windows Operating System: Level I (1) OR	
	Equivalent experience to be determined by program director	0-1
MET109	Machine Trades Print Reading (3) OR	
	One year direct work experience with Mechanical machine drawing OR	
	Satisfactory placement on departmental placement exam	0-3

Required Courses		**32 Credits**
MET112+	Inspection Techniques	3
MET113+	Applied Geometric Dimensioning and Tolerancing	3
MET231+	Manufacturing Processes and Materials	3
GTC/MET206+	CNC Programming	3
MET236AD+	CAD/CAM Programming for Computer Numerical Control (CNC) Machines: MasterCam	3
MET246AD+	Advanced CAD/CAM CNC Programming: MasterCam	3
MET266AD+	Solids CAD/CAM Programming (Mastercam)	3

MET276AD+	Mastercam Certified Programmer Mill Level I: Test Preparation: CPgM1	1
MET286AE+	Solid Design I: Part Modeling: SolidWorks	3
MET288AE+	Solid Design II: Advanced Part Modeling: SolidWorks	3
MET292AE	Solid Design III: Detailing/ GD&T/Assemblies/ Kinematics: SolidWorks	3
MET291AE+	Solid Design: Certified SolidWorks Associate Test Preparation: CSWA	1

Restricted Electives   9 Credits
Students should select nine (9) credits from the following courses:

MET293AE+	Solid Design: Surface Modeling: SolidWorks	3
MET294AE+	Solid Design: Sheet Metal: SolidWorks	3
MET297AA+	Solid Design Internship: 3D Printing	3
MET297AB+	Solid Design Internship: 4 & 5 Axis CNC	3
MET297AC+	Solid Design Internship: Reverse Engineering	3
MET297AD+	Solid Design Internship: Welding Fabrication	3
MET297AE+	Solid Design Internship: Advanced Solid Design	3
MET207+	CNC Mill: Operator Training I	3
MET208+	CNC Lathe: Operator Training I	3
MET220+	Fundamentals of Coordinate Measuring Machines (CMM)	3

General Education   21-27 Credits

ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3)	6
COM100+	Introduction to Human Communication	3
CRE101+	College Critical Reading (3) OR	
	Equivalent as indicated by assessment	0-3
MAT120+	Intermediate Algebra (5) OR	
	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent as indicated by assessment	3-5
PHY101+	Introduction to Physics (4) OR	
CHM130+	Fundamental Chemistry (3)	3-4
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3

MAGNETIC RESONANCE IMAGING
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Magnetic Resonance Imaging   (12 Credits)
The Certificate of Completion (CCL) in Magnetic Resonance Imaging (MRI) program, offered by the Medical Radiography and Nuclear Medicine programs, prepares eligible students (eligible by their previous academic and clinical preparation) to sit for the national examination in Magnetic Resonance Imaging.

Program Prerequisites   3 Credits

| DMI/ICE220+ | Sectional Anatomy | 3 |

Required Courses   12 Credits
Students entering into the program may take the program prerequisite concurrently with required courses with permission of department.

ICE229+	Magnetic Resonance Imagery for Cross-Sectional Anatomy	2
ICE233+	Fundamentals of Magnetic Resonance Imaging (MRI)	1
ICE264+	MRI Physics, Instrumentation and Safety	3
ICE269+	Magnetic Resonance Procedure Protocols	3
ICE272+	Magnetic Resonance Pathology and Contrast	3

MANAGEMENT OF CLINICAL INFORMATION TECHNOLOGY
Certificates of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Management of Clinical Information Technology: Clinical Technology Consulting (17 Credits)
The Certificate of Completion (CCL) in Management of Clinical Information Technology: Clinical Technology Consulting program trains workers to suggest solutions for health IT implementation problems in clinical and public health settings and address workflow and data collection issues from a clinical perspective, including quality measurement and improvement. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites   6-9 Credits

CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses   17 Credits

CIS128	Databases in Practice Management	3
CIS225+	Business Systems Analysis and Design	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2
MGT228+	Management, Planning, and Leadership for Health Information Technology	3

Certificate of Completion in Management of Clinical Information Technology: Health Information Technology Implementation Support (20 Credits)

The Certificate of Completion (CCL) in Management of Clinical Information Technology: Health Information Technology Implementation Support program trains workers to provide on-site user support for the period of time before and during implementation of health IT systems in clinical and public health settings. The previous background of workers in this role includes information technology or information management. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		20 Credits
CIS128	Databases in Practice Management	3
CIS225+	Business Systems Analysis and Design	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HCC145	Medical Terminology for Health Care Workers	3
HSE106+	Introduction to HIPAA Privacy Rule	2
CSM/TQM101	Quality Customer Service	3

Certificate of Completion in Management of Clinical Information Technology: Health Information Technology Technical Support (17 Credits)

The Certificate of Completion (CCL) Management of Clinical Information Technology: Health Information Technology Technical Support program trains workers to maintain systems in clinical and public health settings, including patching and upgrading of software. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		17 Credits
CIS128	Databases in Practice Management	3
CIS225+	Business Systems Analysis and Design	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2
CSM/TQM101	Quality Customer Service	3

Certificate of Completion in Management of Clinical Information Technology: Health Information Technology Training (20 Credits)

The Certificate of Completion (CCL) in Management of Clinical Information Technology: Health Information Technology Training program trains workers to design and deliver training programs, using adult learning principles, to employees in clinical and public health settings. The previous background of workers in this role includes experience as a health professional (medical assistant, nursing, or physician). Experience as a trainer in from the classroom is also desired. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		20 Credits
CIS128	Databases in Practice Management	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2
MGT227+	Training and Instructional Design for Health Information Technology	3
MGT228+	Management, Planning, and Leadership for Health Information Technology	3
CSM/TQM101	Quality Customer Service	3

Certificate of Completion in Management of Clinical Information Technology: Implementation Management (21 Credits)

The Certificate of Completion (CCL) in Management of Clinical Information Technology: Implementation Management program trains workers to provide on-site management of mobile adoption support teams for the period of time before and during implementation of health information technology systems in clinical and public health settings. Workers in this role will, prior to training, have experience in health and/or information technology environments as well as administrative and managerial experience. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		21 Credits
CIS124AA	Project Management Software: Level I	1
CIS128	Databases in Practice Management	3
CIS225+	Business Systems Analysis and Design	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2
MGT228+	Management, Planning, and Leadership for Health Information Technology	3
CSM/TQM101	Quality Customer Service	3

Certificate of Completion in Management of Clinical Information Technology: Practice Workflow and Information Management Redesign   (20 Credits)

The Certificate of Completion (CCL) in Management of Clinical Information Technology: Practice Workflow and Information Management Redesign program trains workers to assist in reorganizing the work of a medical professional to provide meaningful use of the features of health information technology. An Associate in Applied Science (AAS) degree is also available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		20 Credits
CIS128	Databases in Practice Management	3
CIS225+	Business Systems Analysis and Design	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2
MGT228+	Management, Planning, and Leadership for Health Information Technology	3
CSM/TQM101	Quality Customer Service	3

Associate in Applied Science Degree in Management of Clinical Technology   (60 Credits)

The Associate in Applied Science (AAS) degree in Management of Clinical Information Technology program meets the needs of students who wish to learn the process of analysis, design, and implementation of business computer systems, with an emphasis on Electronic Health Record systems for small medical practices. The program develops customer service skills and techniques for communicating effectively with a wide range of medical and allied health personnel. The program is designed to acquaint students with the process of assisting a small medical office to convert to an Electronic Health Record (EHR) and then working with the practice to achieve optimal use. The courses include how to configure an EHR system to achieve features required for meaningful use with appropriate policies and procedures for data control, security, privacy, and confidentiality of health information maintained in electronic health information management systems. The program includes six tracks for specialization, with six Certificates of Completion (CCL) available.

Program Prerequisites		6-9 Credits
CIS105	Survey of Computer Information Systems	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses		17-21 Credits
CIS128	Databases in Practice Management	3
CIS228+	Advanced Databases for Practice Management	3
GBS110	Human Relations in Business and Industry	3
HSE106+	Introduction to HIPAA Privacy Rule	2

Students must select one of six (6) tracks in consultation with a faculty advisor:

Track I: Management of Clinical Information Technology: Clinical Technology Consulting   6 Credits
This track is designed for individuals who are currently licensed medical professionals.

CIS225+	Business Systems Analysis and Design	3
MGT228+	Management, Planning, and Leadership for Health Information Technology	3

Track II: Management of Clinical Information Technology: Health Information Technology Implementation Support   9 Credits

CIS225+	Business Systems Analysis and Design	3
CSM/TQM101	Quality Customer Service	3
HCC145	Medical Terminology for Health Care Workers	3

Track III: Management of Clinical Information Technology: Health Information Technology Technical Support   6 Credits

CIS225+	Business Systems Analysis and Design	3
CSM/TQM101	Quality Customer Service	3

Track IV: Management of Clinical Information Technology: Practice Workflow and Information Management Redesign   9 Credits

CIS225+	Business Systems Analysis and Design	3
CSM/TQM101	Quality Customer Service	3
MGT228+	Management, Planning, and Leadership for Health Information Technology	3

Track V: Management of Clinical Information Technology: Implementation Management   10 Credits

CIS124AA	Project Management Software: Level I	1
CIS225+	Business Systems Analysis and Design	3
CSM/TQM101	Quality Customer Service	3
MGT228+	Management, Planning, and Leadership for Health Information Technology	3

Track VI: Management of Clinical Information Technology: Health Information Technology Training   9 Credits

CSM/TQM101	Quality Customer Service	3
MGT227+	Training and Instructional Design for Health Information Technology	3
MGT228+	Management, Planning, and Leadership for Health Information Technology	3

Restricted Electives		9-18 Credits

These courses must be selected in consultation with a program faculty or program advisor, based upon students' educational background and experience.

Track I:		13-18 Credits

Students should choose 13-18 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS124AA	Project Management Software: Level I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
ITS100	Information Security Awareness	1
CSM/TQM101	Quality Customer Service	3
CIS114DE	Excel Spreadsheet	3

CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

Track II:　　　　　　　　　　　　　　10-15 Credits

Students should choose 10-15 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS124AA	Project Management Software: Level I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
HIM105+	Computers in Healthcare and Health Record Systems	2
ITS100	Information Security Awareness	1
CIS114DE	Excel Spreadsheet	3
CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

Track III:　　　　　　　　　　　　　13-18 Credits

Students should choose 13-18 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
HIM105+	Computers in Healthcare and Health Record Systems	2
HCC145	Medical Terminology for Health Care Workers	3
ITS100	Information Security Awareness	1
CIS114DE	Excel Spreadsheet	3
CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

Track IV:　　　　　　　　　　　　　10-15 Credits

Students should choose 10-15 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS124AA	Project Management Software: Level I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
HIM105+	Computers in Healthcare and Health Record Systems	2
HCC145	Medical Terminology for Health Care Workers	3
ITS100	Information Security Awareness	1
CIS114DE	Excel Spreadsheet	3
CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

Track V:　　　　　　　　　　　　　　9-14 Credits

Students should choose 9-14 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
HIM105+	Computers in Healthcare and Health Record Systems	2
ITS100	Information Security Awareness	1
CIS114DE	Excel Spreadsheet	3
CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT227+	Training and Instructional Design for Health Information Technology	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

Track VI:　　　　　　　　　　　　　10-15 Credits

Students should choose 10-15 credits from the following list of courses to complete a minimum of 60 credits for the AAS degree.

CIS112AA	Report Generator: Crystal Reports I	1
CIS276DB+	SQL Server Database	3
CCT175/CIS175EA	Introduction to Structured Query Language	1
HIM105+	Computers in Healthcare and Health Record Systems	2
CIS114DE	Excel Spreadsheet	3

CIS117DM	Database Management: Microsoft Access - Level I (1)	3
GBS151	Introduction to Business	3
GBS205	Legal, Ethical, and Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision	3
MGT270AA+	Management Internship	1
MGT270AB+	Management Internship	2
MGT270AC+	Management Internship	3
MGT276	Personnel/Human Resources Management	3
OAS108	Business English	3

General Education Requirements   19-21 Credits

ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3)	3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent OR	
	satisfactory completion of a higher level mathematics course	3-5
ECN211	Macroeconomic Principles (3) OR	
ECN212	Microeconomic Principles (3) OR	
SBU200	Society and Business (3)	3
	Any general education course in the Oral Communication area	3
	Any general education course in the Humanities and Fine Arts area	3
	Any general education course in the Natural Sciences area	4

MEDICAL RADIOGRAPHY

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all courses required within the program.

Division: Health Sciences
Chair: Edward Hoskins

Associate in Applied Science Degree in Medical Radiography   (77.5-95.5 Credits)

The Associate in Applied Science (AAS) in Medical Radiography program provides training in patient services using imaging modalities, as directed by physicians qualified to order and/or perform radiologic procedures. Curriculum includes training in patient care essential to radiologic procedures; this includes exercising judgment when performing medical imaging procedures. The program focuses on principles of radiation protection for the patient, self, and others, anatomy, positioning, radiographic techniques, maintaining equipment, processing film, keeping patient records, and performing various office tasks.

Program Prerequisites   10.5-26.5 Credits

Students must earn a G.P.A. of 3.0 or better in all courses within the Program Prerequisites area with the exception of DMI100 and HCC164. Students must earn a "C" or better in DMI100 and HCC164 (or a "P" grade if offered as a "P/Z").

Students must select Option I or Option II or Option III:

Option I: **10.5-18.5 Credits**

Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District.

BIO160	Introduction to Human Anatomy and Physiology	4
COM+++++	Any approved general education Oral Communication course	3
CRE101+	College Critical Reading I (3) OR Equivalent by Assessment OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by Assessment	0-3
ENG101+	First-Year Composition	3
HCC164+	Pharmacology for Allied Health	0.5
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR satisfactory score on District Placement exam OR satisfactory completion of a higher level mathematics course	0-5

Option II: **16-24 Credits**

BIO160	Introduction to Human Anatomy and Physiology	4
COM+++++	Any approved general education Oral Communication course	3
CRE101+	Critical and Evaluative Reading I (3) OR Equivalent by Assessment OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by Assessment	0-3
ENG101+	First-Year Composition	3
HCC164+	Pharmacology for Allied Health	0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in Health Care Setting (0.5)	3
HCC109	CPR for Health Care Provider	0.5
HCC146	Common Medical Terminology for Health Care Workers	2
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR satisfactory score on District Placement exam OR satisfactory completion of a higher level mathematics course	0-5

Option III: **18.5-26.5 Credits**

Currently working in the radiography field with minimum six (6) months of experience in a hospital acute care setting OR one (1) year experience in an outpatient imaging setting.

Option III is available to medical radiography practical technologists (PTs) with current state Medical Radiologic Technology Board of Examiners (MRTBE) licensure.

BIO160	Introduction to Human Anatomy and Physiology	4
COM+++++	Any approved general education Oral Communication course	3
CRE101+	Critical and Evaluative Reading I (3) OR Equivalent by Assessment OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by Assessment	0-3
DMI110+	Critical Evaluation of the Diagnostic Medical Image	1.5
DMI113	Orientation to Clinical Environment	1
ENG101+	First-Year Composition	3
HCC164+	Pharmacology for Allied Health	0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC109	CPR for Health Care Provider	0.5
HCC146	Common Medical Terminology for Health Care Workers	2
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR satisfactory score on District Placement exam OR satisfactory completion of a higher level mathematics course	0-5

Required Courses 56 Credits

Students who have been admitted into Option III in the Prerequisites Area are not required to enroll in DMI101, DMI102, DMI103, DMI104, DMI105, DMI106, DMI107, but are required to take Credit by Evaluation.

DMI101+	Radiation Safety	2
DMI102+	Radiographic Positioning I	4
DMI103+	Radiographic Processing	1.5
DMI104+	Radiography Practicum I	6
DMI105+	Fundamentals of Radiation Physics	3
DMI106+	Radiographic Image Evaluation I	1
DMI107+	Radiographic Technique	4
DMI112AA+	Skeletal Procedures I	1.5
DMI112AB+	Skeletal Procedures II	1.5
DMI114AA+	Radiography Practicum IIA	2
DMI114AB+	Radiography Practicum IIB	2
DMI118AA+	Contrast Media Procedures I	1
DMI118AB+	Contrast Media Procedures II	1
DMI204+	Radiography Practicum III	4
DMI211+	Pharmacology of Contrast Agents	0.5
DMI212+	Advanced Radiographic Procedures	1
DMI214+	Radiography Practicum IV	5
DMI215+	Radiation Biology	2
DMI216+	Radiographic Image Evaluation II	1
DMI221+	Adv Imaging Modalities & Radiation Protection	2
DMI222+	Advanced Radiologic Pathology	1
DMI224+	Radiography Practicum V	5
DMI225+	Quality Improvement	1
DMI226+	Radiographic Image Evaluation III	1

DMI227+	Radiography Seminar	1
HCC200+	Basic Client Care for Allied Health	0.5
HCC218+	Venous Access for Diagnostic Agents	0.5

General Education Requirements 11-13 Credits

ENG102+	First-Year Composition	3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR Equivalent OR satisfactory completion of a higher level mathematics course	3-5
	Any general education course in the Humanities and Fine Arts area	2
	Any general education course in the Social and Behavioral Sciences area	3

MEDICAL TRANSCRIPTION
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Medical Transcription (33-39.5 Credits)

The Certificate of Completion (CCL) in Medical Transcription program is the field of transcribing dictation by physicians and other health care professionals regarding patient diagnosis, treatment and prognosis. It employs state-of-the-art electronic equipment for the transcription of a variety of medical reports in order to document patient care and facilitate delivery of health care services. Medical transcription requires a broad knowledge of medical terminology, anatomy and physiology, surgical procedures, medications, diagnostic tests and curative procedures and medico-legal principles. Medical Transcription is a vital part of the Health Information Management department, ensuring accurate electronic medical records. Medical Transcription enforces standards and requirements that apply to patient health information records, as well as the legal significance of medical transcripts.

A wide variety of careers exist in the medical transcription field including working in doctors' offices, hospitals, outpatient diagnostic services, insurance companies, or private dictation services. Opportunities abound for a 'self starting' individual who is interested in the medical field, with word processing skills, and who takes great pride in efficiency and accuracy. After a year of work experience in the field of medical transcription, students are eligible to become Certified Medical Transcriptionists (CMT) by taking the national certification exam offered by the Association for Healthcare Documentation Integrity (AHDI).

Program Prerequisites 1-7 Credits
Students must select one of the following 2 options:

Option I: 1 Credit
 50 WPM typing skill

| BPC/OAS130DK+ | Beginning Word | 1 |

AND

Current credential in health care discipline or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District.

Option II:		7 Credits
50 WPM typing skill		
BPC/OAS130DK+	Beginning Word	1
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC145	Medical Terminology for Health Care Workers	3

Required Courses		32-32.5 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
HCC/RES109	CPR for the Health Care Provider (0.5) OR Proof of Current Health Care Provider CPR Certification (0)	0-0.5
MTR101+	Medical Transcription Applications	3
MTR103	Pharmacology for Medical Transcriptionists	2
MTR105	Medical Transcription Style and Grammar	3
MTR190	Technology for Medical Transcription	3
MTR201+	Physician's Office Transcription	3
MTR202+	Medical-Surgical Transcription	3
MTR203+	Diagnostic Therapeutic Transcription	3
MTR270+	Advanced Medical Terminology	3
MTR271+	Pathophysiology for Medical Transcription	3
MTR273+	Medical Transcription Seminar	1
MTR273AA+	Medical Transcription Practicum	1

Associate in Applied Science in Medical Transcription (63-75.5 Credits)

The Associate in Applied Science (AAS) in Medical Transcription program is the field of transcribing dictation by physicians and other health care professionals regarding patient diagnosis, treatment and prognosis. It employs state-of-the-art electronic equipment for the transcription of a variety of medical reports in order to document patient care and facilitate delivery of health care services. Medical transcription requires a broad knowledge of medical terminology, anatomy and physiology, surgical procedures, medications, diagnostic tests and curative procedures and medico-legal principles. Medical Transcription is a vital part of the Health Information Management department, ensuring accurate electronic medical records. Medical Transcription enforces standards and requirements that apply to patient health information records, as well as the legal significance of medical transcripts.

A wide variety of careers exist in the medical transcription field including working in doctors' offices, hospitals, outpatient diagnostic services, insurance companies, or private dictation services. Opportunities abound for a "self starting" individual who is interested in the medical field, with word processing skills, and who takes great pride in efficiency and accuracy. After a year of work experience in the field of medical transcription, students are eligible to become Certified Medical Transcriptionists (CMT) by taking the national certification exam offered by the Association for Healthcare Documentation Integrity (AHDI).

Program Prerequisites		1-7 Credits
Students must select one of the following 2 options:		
Option I:		1 Credit
50 WPM typing skill		
BPC/OAS130DK+	Beginning Word	1
AND		

Current credential in health care discipline or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District.

Option II:		7 Credits
50 WPM typing skill		
BPC/OAS130DK+	Beginning Word	1
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC145	Medical Terminology for Health Care Workers	3

Required Courses		45-45.5 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
HCC/RES109	CPR for the Health Care Provider (0.5) OR Proof of Current Health Care Provider CPR Certification (0)	0-0.5
MTR101+	Medical Transcription Applications	3
MTR103	Pharmacology for Medical Transcriptionists	2
MTR105	Medical Transcription Style and Grammar	3
MTR190	Technology for Medical Transcription	3
MTR201+	Physician's Office Transcription	3
MTR202+	Medical-Surgical Transcription	3
MTR203+	Diagnostic Therapeutic Transcription	3
MTR221+	Advanced Office Transcription	3
MTR222+	Advanced Surgical Transcription	3
MTR223+	Advanced Diagnostic Transcription	3
MTR230+	Dictation by Non-native Speakers	3
MTR270+	Advanced Medical Terminology	3
MTR271+	Pathophysiology for Medical Transcription	3
MTR273+	Medical Transcription Seminar	1
MTR273AB+	Medical Transcription Practicum	2

General Education Requirements		17-23 Credits
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3)	6
COM110	Interpersonal Communication	3
CRE101+	College Critical Reading (3) OR Equivalent by assessment (0).	0-3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	

Equivalent by Assessment OR
Satisfactory completion of a higher level
mathematics course   3-5
Any ENH or HUM prefix general education course in the
Humanities and Fine Arts area   2-3
Any PSY or SOC prefix general education course in the Social
and Behavioral Sciences area   3

NETWORKING ADMINISTRATION AND TECHNOLOGY
Certificates of Completion
Associate in Applied Science Degree

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Microsoft Product Specialist (14-15 Credits)

The Certificate of Completion (CCL) in Microsoft Product Specialist provides training for an entry-level position working with Windows networks. Knowledge and skills are developed to install, configure, customize, optimize, and troubleshoot Windows servers and Windows client workstations. The courses in the program also help to prepare for Microsoft Certified Product Specialist (MCP), Microsoft Certified Systems Administrator (MCSA), and Microsoft Certified Systems Engineer (MSCE) examinations. The curriculum is taught by Microsoft Certified Professionals.

Program Prerequisites:		3 Credits
CIS105	Survey of Computer Information Systems (3) OR Permission of Department or Division	3

Required Courses:		14-15 Credits
CIS121AB	Microsoft Command Line Operations	1
BPC170+	Computer Maintenance I: A+ Essentials Prep	3
CIS190+	Introduction to Local Area Networks (3) OR	
CNT140	Cisco Networking Basics (4) OR	
MST140	Microsoft Networking Essentials (3)	3-4
MST150++	Any MST150 course	3
MST152++	Any MST152 course	4

Certificate of Completion in Microsoft Systems Engineer (32-33 Credits)

The Certificate of Completion (CCL) in Microsoft Systems Engineer provides training for an intermediate- to supervisory-level position working with Windows networks. The program develops skills to install, configure, customize, optimize, and troubleshoot Windows servers, Windows client workstations and Microsoft Office products. The courses in the program also help to prepare for Microsoft Certified Product Specialist (MCP), Microsoft Certified Systems Administrator (MCSA), and Microsoft Certified Systems Engineer (MCSE) examinations. The curriculum is taught by Microsoft Certified Professionals.

Program Prerequisites		3 Credits
CIS105	Survey of Computer Information Systems OR Permission of Department or Division	3

Required Courses		32-33 Credits
CIS121AB	Microsoft Command Lind Operations	1
BPC170+	Computer Maintenance I: A+ Essentials Prep	3
CIS190+	Introduction to Local Area Networks (3) OR	
CNT140	Cisco Networking Basics (4) OR	
MST140	Microsoft Networking Essentials (3)	3-4
MST150++	Any MST150 course	3
MST152++	Any MST152 course	4
MST155+	Implementing Windows Network Infrastructure	3
MST157+	Implementing Windows Directory Services	3
MST232+	Managing a Windows Network Environment	3
MST244+	Microsoft SQL Server Administration	3
MST253+	Designing a Microsoft Windows 2000 Directory Services Infrastructure (3) OR	
MST259+	Designing Windows Network Security (3)	3
MST255+	Designing Windows Network Infrastructure	3

Certificate of Completion in Networking Administration: Cisco   (14-18 Credits)

The Certificate of Completion (CCL) in Networking Administration: Cisco program is a Cisco Systems recognized Regional or Local Academy that prepares students for industry-recognized certification. The curriculum is taught by Cisco Systems Certified Professionals. The Certificate of Completion (CCL) in Networking Administration: Cisco provides training for a position working with Cisco Systems networking and Internet hardware. Knowledge and skills are developed to install, configure, maintain, and troubleshoot Cisco routers and components, advanced routing protocols, Local Area Networks (LANs), and Wide Area Networks (WANs). The courses in the program also prepare students for the Cisco Certified Networking Associate examination.

Required Course:		14-18 Credits
One of the following 2 tracks must be fulfilled:		
Track 1 – Exploration		**14–18 Credits**
CNT140	Cisco Networking Basics (4) OR	
CNT140AA	Cisco Networking Fundamentals (4) OR	
CNT138	CCNA Discovery - Networking for Home and Small Businesses (3) AND	
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider (3)	4-6
CNT150+	Cisco Networking Router Technologies (4) OR	
CNT150AA+	Cisco Routing Protocols and Concepts (4)	4
CNT160+	Cisco Switching Basics and Intermediate Routing (3) OR	
CNT160AA+	Cisco Local Area Networking (LAN) Switching and Wireless (4)	3-4
CNT170+	Cisco Wide Area Networks (WAN) Technologies (3) OR	
CNT170AA+	Cisco Accessing the Wide-Area Network (WAN) (4)	3-4

Track 2 – Discovery		**14 Credits**
CNT138	CCNA Discovery - Networking for Home and Small Businesses	3
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider	3
CNT158+	CCNA Discovery - Introduction to Routing and Switching in the Enterprise	4
CNT168+	CCNA Discovery - Designing and Supporting Computer Networks	4

Certificate of Completion in Networking Administration: Microsoft Windows Server (18 Credits)

The Certificate of Completion (CCL) in Network Administration: Microsoft Windows Server program provides students with background knowledge and skills required for learning the specific tasks and industry recognized standards associated with computer networks and data communications. This program also prepares students to complete the required certification tests for Microsoft Administrator. The Network core courses will also prepare students towards certification in Microsoft and Novell.

Program Prerequisites:		0-3 Credits
CRE101	College Critical Reading (3) OR	
	Equivalent by assessment	0-3

Required Courses:		18 Credits
CIS105	Survey of Computer Information Systems (3) OR	
BPC110	Computer Usage and Applications (3)	3
MST150	Microsoft Windows Professional (3) OR	
MST150++	Microsoft Windows (any module) (3)	3
MST152+	Microsoft Windows Server (4) OR	
MST152DA+	Microsoft Windows 2000 Server (4) OR	
MST152DB+	Microsoft Windows 2003 Server (4) OR	
MST158DA+	Windows Server Administration (4)	4
MST155DA+	Windows Server Network Infrastructure Configuration	4
MST157DA+	Active Directory Windows Server Configuration	4

Certificate of Completion in Networking Technology: Cisco (20-24 Credits)

A Cisco Systems-recognized Regional or Local Academy prepares students for industry-recognized certification. The curriculum is taught by Cisco Systems Certified Professionals. The Certificate of Completion (CCL) in Networking Technology: Cisco provides training for a supervisory position working with Cisco Systems networking and Internet hardware. Knowledge and skills are developed to install, configure, maintain, and troubleshoot Cisco routers and components, advanced routing protocols, Local Area Networks (LANs), and Wide Area Networks (WANs). The courses in the program also prepare students for the Cisco Certified Networking Associate examination.

Required Course:		20-24 Credits
BPC170+	Computer Maintenance I: A+ Essentials Prep	3
CIS126+	UNIX/Linux Operating System (3) (Any module) OR	
MST150+	Microsoft Windows Professional (3) (Any module)	3

One of the following 2 tracks must be fulfilled:

Track 1 – Exploration		14–18 Credits
CNT140	Cisco Networking Basics (4) OR	
CNT140AA	Cisco Networking Fundamentals (4) OR	
CNT138	CCNA Discovery - Networking for Home and Small Businesses (3) AND	
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider (3)	4-6
CNT150+	Cisco Networking Router Technologies (4) OR	
CNT150AA+	Cisco Routing Protocols and Concepts (4)	4
CNT160+	Cisco Switching Basics and Intermediate Routing (3) OR	
CNT160AA+	Cisco Local Area Networking (LAN) Switching and Wireless (4)	3-4

CNT170+	Cisco Wide Area Networks (WAN) Technologies (3) OR	
CNT170AA+	Cisco Accessing the Wide-Area Network (WAN) (4)	3-4

Track 2 – Discovery		14 Credits
CNT138	CCNA Discovery - Networking for Home and Small Businesses	3
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider	3
CNT158+	CCNA Discovery - Introduction to Routing and Switching in the Enterprise	4
CNT168+	CCNA Discovery - Designing and Supporting Computer Networks	4

Associate in Applied Science Degree in Microsoft Networking Technology (62 Credits)

The Associate in Applied Science in Microsoft Networking Technology develops skills to implement a network infrastructure and install, configure, monitor, optimize, and troubleshoot Windows server and Windows client workstations. Courses in the program also help to prepare for Microsoft Certified Product Specialist (MCP), Microsoft Certified Systems Administrator (MCSA), and Microsoft Certified Systems Engineer (MCSE) examinations. The curriculum is taught by Microsoft Certified Professionals.

Program Prerequisites		3 Credits
CIS105	Survey of Computer Information Systems OR Permission of Department or Division	3

Required Courses		24-25 Credits

Courses selected cannot apply in both Required Courses and Restricted Electives area.

CIS121AB	Microsoft Command Line Operations	1
BPC170+	Computer Maintenance I: A+ Essentials Prep	3
CIS102	Interpersonal and Customer Service Skills for IT Professionals	1
CIS126DA	UNIX Operating System (3) OR	
CIS126AA	UNIX Operating System: Level I (1) AND	
CIS126BA+	UNIX Operating System: Level II (1) AND	
CIS126CA+	UNIX Operating System: Level III (1) OR	
CIS126DL	Linux Operating System (3) OR	
CIS126AL	Linux Operating System I (1) AND	
CIS126BL+	Linux Operating System II (1) AND	
CIS126CL+	Linux Operating System III (1)	3
CIS190+	Introduction to Local Area Networks (3) OR	
CNT140	Cisco Networking Basics (4) OR	
MST140	Microsoft Networking Essentials (3)	3-4
MST150++	Any MST150 course	3
MST152++	Any MST152 course	4
MST155+	Implementing Windows Network Infrastructure	3
MST157+	Implementing Windows Directory Services	3

Associate in Applied Science Degree in Networking Technology: Cisco (60-64 Credits)

A Cisco Systems-recognized Regional or Local Academy, prepares students for industry-recognized certification. The curriculum is taught by Cisco Systems Certified Professionals. The Associate in Applied Science (AAS) in Networking Technology: Cisco provides training for a supervisory position working with Cisco Systems networking

and Internet hardware. Knowledge and skills are developed to install, configure, maintain, and troubleshoot Cisco routers and components, advanced routing protocols, Local Area Networks (LANs), and Wide Area Networks (WANs); troubleshoot problems with various common hardware and software configurations; perform administrative tasks in a network; develop methods for customer service. Courses in the program also prepare students for the Cisco Certified Networking Associate examination.

Required Courses   20-24 Credits

BPC170+	Computer Maintenance I: A+ Essentials Prep	3
CIS126++	UNIX/Linux Operating System (Any Module) (3) OR	
MST150+	Microsoft Windows Professional (3) OR	
MST150VI+	Microsoft Windows Vista Administration (3) OR	
MST150XP+	Microsoft Windows XP Professional (3)	3

One of the following 2 tracks must be fulfilled:

Track 1 – Exploration   14–18 Credits

CNT140	Cisco Networking Basics (4) OR	
CNT140AA	Cisco Networking Fundamentals (4) OR	
CNT138	CCNA Discovery - Networking for Home and Small Businesses (3) AND	
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider (3)	4-6
CNT150+	Cisco Networking Router Technologies (4) OR	
CNT150AA+	Cisco Routing Protocols and Concepts (4)	4
CNT160+	Cisco Switching Basics and Intermediate Routing (3) OR	
CNT160AA+	Cisco Local Area Networking (LAN) Switching and Wireless (4)	3-4
CNT170+	Cisco Wide Area Networks (WAN) Technologies (3) OR	
CNT170AA+	Cisco Accessing the Wide-Area Network (WAN) (4)	3-4

Track 2 – Discovery   14 Credits

CNT138	CCNA Discovery - Networking for Home and Small Businesses	3
CNT148+	CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider	3
CNT158+	CCNA Discovery - Introduction to Routing and Switching in the Enterprise	4
CNT168+	CCNA Discovery - Designing and Supporting Computer Networks	4

Restricted Electives   15 Credits

*S*tudents may select fifteen (15) from any of the following courses, except courses used to satisfy the Required Courses area:

BPC110	Computer Usage and Applications (3) OR	
CIS105	Survey of Computer Information Systems (3)	3
CIS126++	UNIX/Linux Operating System (Any Module) (3) OR	
MST150+	Microsoft Windows Professional (3) OR	
MST150VI+	Microsoft Windows Vista Administration (3) OR	
MST150XP+	Microsoft Windows XP Professional (3)	3
CIS190+	Introduction to Local Area Networks (3) OR	
MST140	Microsoft Networking Essentials (3)	3
CIS270+	Essentials of Network and Information Security	3
CIS296WA+	Cooperative Education (1) OR	
CIS296WB+	Cooperative Education (2) OR	
CIS296WC+	Cooperative Education (3) OR	

CIS296WD+	Cooperative Education (4)	1-4
CIS298AA+	Special Projects (1) OR	
CIS298AB+	Special Projects (2) OR	
CIS298AC+	Special Projects (3)	1-3
CIS121AB	Microsoft Command Line Operations	1
CIS102	Interpersonal and Customer Service Skills for IT Professionals	1
CIS110	Home Entertainment and Computer Networking	3
ELT100	Survey of Electronics	3
CIS224	Project Management Microsoft Project for Windows	3
CNT145+	Voice and Data Cabling	4
CNT181+	Cisco Securing IOS Networks	4
CNT182+	Cisco Secure Firewall Appliance Configuration	3
CNT183+	Cisco Secure Virtual Private Network Configuration	3
CNT185+	Cisco Network Security	4
CNT186+	Fundamentals of Wireless LANs	4
CNT190+	Cisco Network Design	3
CNT2++++	Any 200 level course with a CNT Prefix	1-4
BPC270+	Computer Maintenance II: A+ Technician Prep	3
BPC273+	Advanced Server Computer Maintenance: Server+ Prep	3
CIS127DL+	Linux Utilities	3
CIS238DL+	Linux System Administration	3
CIS239DL+	Linux Shell Scripting	3
CIS240DL+	Linux Network Administration	3
CIS241DL+	Apache Web Server Administration (Linux/Unix)	3
CIS271DL+	Linux Security	3
CIS274DL+	Linux Enterprise Network Security	3
MST152+	Microsoft Windows Server (4) OR	
MST152DA+	Microsoft Windows 2000 Server (4) OR	
MST152DB+	Microsoft Windows 2003 Server (4)	4
MST155+	Implementing Windows Network Infrastructure	3
MST157+	Implementing Windows Directory Services	3
MST232+	Managing a Windows Network Environment	3
CIS250+	Management of Information Systems	3
CIS280	Current Topics in Computing	3
CIS290AA+	Computer Information Systems Internship (1) OR	
CIS290AB+	Computer Information Systems Internship (2) OR	
CIS290AC+	Computer Information Systems Internship (3)	1-3

General Education Requirements   25 Credits

ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3) OR	
ENG111+	Technical and Professional Writing	6
CRE101+	Critical and Evaluative Reading I (3) OR	
	Equivalent by Assessment	3
Any general education course in the Mathematics area		3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Communication area		3
Any general education course in the Social and Behavioral area		3
Any general education course in the Natural Science area		4

NUCLEAR MEDICINE TECHNOLOGY
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Associate in Applied Science Degree in Nuclear Medicine Technology (84-87 Credits)

The Associate in Applied Science (AAS) in Nuclear Medicine Technology program is designed to prepare students to function as competent members of the healthcare team in the role of nuclear medicine technologists. Employment opportunities exist in hospitals, medical offices and ambulatory clinics. Upon completion of the program, the student will be eligible to apply for the certifying board examination administered by the American Registry of Radiologic Technology [ARRT (N)], the nuclear Medicine Technology Certification Board (NMTCB) and Arizona State Licensure. The curriculum is structured to provide appropriate didactic instruction, as well as ample supervised clinical exposure, to assure sufficient opportunity to achieve all didactic and clinical requirements.

Program Prerequisites   10-32.5 Credits

The following college courses must be completed with a cumulative grade point average (GPA) of 3.0 or higher and with a final grade of "C" or better. All previous college semester credits must be from a regionally accredited institution recognized by GateWay Community College with a cumulative grade point average (GPA) of 2.4 or higher.

BIO160	Introduction to Human Anatomy and Physiology (4) OR	
BIO201+	Human Anatomy and Physiology I (4) AND	
BIO202+	Human Anatomy and Physiology II (4) OR	
	National Certification or License as indicated in Admission Criteria (0)	0-8
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Lab (1)	4
DMI105+	Fundamentals of Radiation Physics (3) OR	
PHS110+	Fundamental Physical Science (4) OR	
PHY101+	Introduction to Physics (4) OR	
PHY111+	General Physics I (4) AND	
PHY112+	General Physics II (4)	3-8
HCC/RES109	CPR for Health Care Provider (0.5) OR	
	American Heart Association Health Care Provider CPR certification (0)	0-0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (.05) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5) OR	
	National Certification or License as indicated in Admission Criteria (0)	0-3
HCC145	Medical Terminology for Health Care Workers (3) OR	
HCC146	Common Medical Terminology for Health Care Workers (2) OR	
	National Certification or License as indicated in Admission Criteria (0)	0-3
MAT150+	College Algebra/Functions (5) OR	
MAT151+	College Algebra/Functions (4) OR	
MAT152+	College Algebra/Functions (3) OR	
	Higher level mathematics course	3-5
NUC100	Introduction to Nuclear Medicine Technology (1) OR	
	National Certification or License as indicated in Admission Criteria (0)	0-1

Required Courses   70 Credits

DMI/ICE220+	Sectional Anatomy	3
NUC110+	Radiation Safety for Nuclear Medicine	2
NUC112+	Fundamentals of Nuclear Medicine Lab	1
NUC114+	Fundamentals of Nuclear Medicine	3
NUC116+	Nuclear Medicine Imaging I	3
NUC120+	Radiopharmaceutical/Pharmaceutical Administration for the Nuclear Medicine Technologist	1.5
NUC122+	Nuclear Medicine Imaging I Lab	1
NUC124AA+	Nuclear Medicine Theory I: Part A	1.5
NUC124AB+	Nuclear Medicine Theory I: Part B	1.5
NUC126+	Nuclear Medicine Imaging II	3
NUC130+	Patient Care for the Nuclear Medicine Technologist	1.5
NUC140+	Clinical Pathology for Diagnostic Imaging	3
NUC150+	Fundamentals of Computed Tomography	2
NUC170AA+	Nuclear Medicine Cardiac Imaging I	1.5
NUC170AB+	Nuclear Medicine Cardiac Imaging II	1.5
NUC212+	Clinical Practicum I	2
NUC213+	Nuclear Medicine Image Evaluation I	1
NUC222+	Clinical Practicum II	3
NUC223+	Nuclear Medicine Image Evaluation II	1
NUC232+	Clinical Practicum III	3
NUC233+	Nuclear Medicine Image Evaluation III	1
NUC234+	Nuclear Medicine Theory II	2
NUC236+	Nuclear Medicine Imaging III	3
NUC242+	Clinical Practicum IV	3
NUC243+	Nuclear Medicine Image Evaluation IV	1
NUC244+	Nuclear Medicine Theory III	3
NUC252+	Clinical Practicum V	3
NUC253+	Nuclear Medicine Image Evaluation V	1
NUC262+	Capstone Practicum	2
NUC270+	Nuclear Medicine Scientific Method	1
NUC272+	Cardiac Practicum	2
NUC280+	Nuclear Medicine PET and PET/CT	3
NUC282+	PET Practicum	2
NUC290+	Nuclear Medicine Certification Preparation Seminar	3

General Education Requirements   14-17 Credits

ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3) OR	
ENG111+	Technical and Professional Writing (3)	6
Any general education course in the Oral Communication area		3
COM110 OR (COM110AA AND COM110AB AND COM110AC) recommended, but not required		

Any general education course in the Critical Reading area OR
  Equivalent by Assessment   0-3
Any general education course in the Humanities and Fine
  Arts area   2
Any general education course in the Social and Behavioral
  Sciences area   3
PSY101 Introduction to Psychology recommended, but not required

NURSING: MARICOPA NURSING at GATEWAY COMMUNITY COLLEGE
Certificates of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses or within the program or pass in P/Z graded courses.

Division: Nursing
Nursing Division Director: Dr. Margi Schultz

Program Description: The Nursing Program is available at eight (8) of the Maricopa Community Colleges. Clinical experiences are provided in a variety of healthcare settings. The Nursing Program provides eligibility for students to apply for the National Council Licensure Examination (NCLEX) for the registered nurse license. Licensing requirements are the exclusive responsibility of the Arizona State Board of Nursing.

Accreditation: The Nursing Program is approved by the Arizona State Board of Nursing and accredited by the National League for Nursing Accrediting Commission (NLNAC), 3343 Peachtree Rd. NE, Suite 500 Atlanta, GA 30326 404.975.5000 **www.nlnac.org**

Program Offerings:
This program is offered at the following sites:
Chandler Gilbert Community College
Estrella Mountain Community College
GateWay Community College
Glendale Community College
Mesa Community College
Banner Boswell/Mesa Community College
Paradise Valley Community College
Phoenix College
Scottsdale Community College

GateWay Community College offers a variety of scheduling options in nursing that may include traditional, accelerated, and part-time options. Not all scheduling options are available every semester.

Waiver of Licensure/Certification Guarantee: Admission or graduation from the Nursing Program does not guarantee obtaining a license to practice nursing. Licensure requirements and the subsequent procedures are the exclusive right and responsibility of the Arizona State Board of Nursing. Students must satisfy the requirements of the Nurse Practice Act: Statutes, Rules and Regulations, independently of any college or school requirements for graduation.

Pursuant to A.R.S. 32-1606(B)(17), an applicant for professional or practical nurse license by examination is not eligible for licensure if the applicant has any felony convictions and has not received an absolute discharge from the sentences for all felony convictions. The absolute discharge must be received five or more years before submitting this application. If you cannot prove that the absolute discharge date is five or more years, the Board cannot process your application.

All nursing applicants for licensure will be fingerprinted to permit the Department of Public Safety to obtain state and federal criminal history information. All applicants with a positive history are investigated. If there is any question about eligibility for licensure or certification, contact the nursing education consultant at the Arizona State Board of Nursing (602-889-5150).

Health Declaration: It is essential that Nursing students be able to perform a number of physical activities in the clinical portion of the program. At a minimum, students will be required to lift patients, stand for several hours at a time and perform bending activities. Students who have chronic illness or condition must be maintained on current treatment and be able to implement direct patient care. The clinical nursing experience also places students under considerable mental and emotional stress as they undertake responsibilities and duties impacting patients' lives. Students must be able to demonstrate rational and appropriate behavior under stressful conditions. Individuals should give careful consideration to the mental and physical demands of the program prior to making application.

Health and Safety Requirements for Nursing Program:
1. Students must submit a completed Health and Safety Documentation Checklist and maintain current status throughout the program.
2. Students must submit CPR card for Health Care Provider and maintain current status throughout the program.
3. Students must submit a current and valid Finger Print Clearance Card.
4. Health Provider Signature Form signed by a licensed health care provider.
5. Negative urine drug screen.

Grade Requirements: Students must obtain a "C" grade or better in all courses required within the program.

Course Fee Information: Please see class schedule for course fees information.

University Transfer Students: Students who are planning to earn the Bachelor of Science in Nursing may obtain their prerequisite courses at the Maricopa Community Colleges. For information on courses that meet requirements for admission into a baccalaureate program, please contact a program advisor.

NURSE ASSISTING
Certificate of Completion in Nurse Assisting (6 Credits)
The Certificate of Completion (CCL) in Nurse Assisting prepares students for entry level employment in various health care settings as a nursing assistant. The program combines classroom instruction with clinical laboratory, skilled care and acute care experiences. Students who complete the program are eligible to take a written and practical certification examination and work as a Certified Nursing Assistant. Licensing requirements are the exclusive responsibility of the Arizona State Board of Nursing. The GateWay Nurse Assisting Program is approved by the Arizona State Board of Nursing.

The Nurse Assisting Pathway

The nurse assisting pathway is designed to prepare students to complete the Nurse Assistant Certification through the Arizona State Board of Nursing to practice in a health care agency as a certified nurse assistant. Completion of the nurse assistant program of study provides job ready skills as a nursing assistant. Students may apply to the Nursing Program after completing the prerequisite courses and admission requirements.

Admission Criteria: Application and acceptance into the program, High School graduate or GED, current Health Care Provider CPR Card required before beginning courses. All students must submit a copy of a fingerprint clearance card with their application for the Maricopa Community College District Nursing Program.

Required Courses		6 Credits
NUR158+	Nurse Assisting	6

NURSING REFRESHER
Certificate of Completion in Nursing Refresher (10 Credits)

The Certificate of Completion (CCL) in Nurse Refresher program provides registered nurses with a review and update of nursing theory and practice. The Nurse Refresher program is approved by the Arizona State Board of Nursing. Successful program completion satisfies the Arizona State Board of Nursing RN license renewal requirement for applicants who do not meet the practice mandate as stated in The Nurse Practice Act, R4-19312 (B).

Admission Criteria: Formal application and admission to the program is required; All applicants must have an active RN license or an inactive RN license that is eligible for renewal per Regulatory Board requirements; A minimum of 1 year work experience as a registered nurse following licensure is required; Applicants must have practiced nursing no longer than 15 years ago; Participation in a specialty track clinical experience requires at least 1 year prior RN work experience in the identified nursing specialty; All applicants must be in good standing with the Regulatory Board. RN's with restricted licenses are not eligible for the program. Once enrolled, students receiving any disciplinary actions against their license must notify the Nursing Program Chair within five (5) school days. The Nursing Program Chair reserves the right to restrict the student's participation in clinical experiences and involvement in patient care until the license is valid and unrestricted.

Required Courses		10 Credits
NUR228	Registered Nurse Refresher	6
NUR229+	Registered Nurse Preceptorship	4

FAST TRACK PRACTICAL NURSING
Certificate of Completion in Fast Track Practical Nursing (28 Credits)

The Fast Track Practical Nursing Certificate of Completion (CCL) Program provides students with the theory and skills required to practice as a practical nurse in acute care, extended care, and intermediate care settings. The program of study combines nursing theory lectures with planned patient care learning experiences in hospitals, nursing homes and health care agencies. Graduates are eligible to take the National Council Licensing Examination (NCLEX-PN) to become a licensed practical nurse (LPN). Licensing requirements are the exclusive responsibility of the Arizona State Board of Nursing according to Title 32, Chapter 15 of the Arizona Revised Statues.

Admission Criteria: Application and acceptance into Fast-Track Practical Nursing Program; Documentation of Health and Safety Requirements; Fingerprint Clearance Card; College Placement Exam or Nurse Entrance Exam (NET); High school graduate or G.E.D. or permission of program chair.

Program Prerequisites		6 Credits
NUR158+	Nurse Assisting	6

Required Courses		22 Credits
NUR160PN+	Practical Nursing Theory and Science I	11
NUR180PN+	Practical Nursing Theory and Science II	11

PRACTICAL NURSING
Certificate of Completion in Practical Nursing (31-41 Credits)

The Practical Nursing Certificate of Completion (CCL) Program is available at eight of the Maricopa Community Colleges. Clinical experiences are provided in a variety of healthcare settings. The Practical Nursing Program provides eligibility for students to apply for the national exam for the practical nurse license. Licensing requirements are the exclusive responsibility of the Arizona State Board of Nursing. The Practical Nursing Certificate of Completion (CCL) Program is approved by the Arizona State Board of Nursing.

Practical Nurse Exit Option

Following completion of the practical nurse level program of study, the student is eligible to apply for licensure as a practical nurse. Licensed Practical Nurses (L.P.N.) are employed in acute, long-term, and community-based health care agencies under the direction of a registered nurse. Practical Nurses function within their legal scope of practice and use professional standards of care in illness care and health promotion activities for clients and families across the life span.

The Associate in Applied Science in Nursing degree program is approved by the Arizona State Board of Nursing and accredited by the National League for Nursing Accrediting Commission (NLNAC), 61 Broadway 33rd Floor, New York, New York 10006, 212.363.5555, ext 153.

Admission Criteria: High School diploma or GED; Formal application and admission to the program is required; A passing score on a nursing program admission test is required to complete an application; The Nursing Program Chair reserves the right to deny acceptance of an admission application if the applicant was dismissed for issues relating to academic integrity, unsafe patient care, and/or two (2) or more failures from any nursing program; All applicants holding or receiving a certificate as a Nursing Assisting and/or license as a Practical Nurse must remain in good standing with the Board of Nursing. Once enrolled, students receiving any disciplinary actions against their certificate or license must notify the Nursing Program Chair within five (5) school days. The Nursing Program Chair reserves the right to restrict the student's participation in clinical experiences and involvement in patient care until the certificate and/or license is valid and unrestricted.

Program Prerequisites		10-20 Credits
BIO156	Introductory Biology for Allied Health (4) OR	
BIO181	General Biology (Majors) I (4) OR	
	One year of high school biology	0-4
BIO201+	Human Anatomy and Physiology I	4

CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1) OR	
	One year of high school chemistry	0-4
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Satisfactory completion of higher level	
	mathematics course	3-5
PSY101	Introduction to Psychology OR	
PSY240+	Developmental Psychology (3)	3

Required Courses		21 Credits
NUR151+	Nursing Theory and Science I	10
NUR171+	Nursing Theory and Science II	8
NUR191+	Practical Nursing Transition Course	3

NURSING (REGISTERED NURSE)
Associate of Applied Science in Nursing (61-74 Credits)

The Associate in Applied Science (AAS) Nursing Program is available at eight (8) of the Maricopa Community Colleges. Clinical experiences are provided in a variety of healthcare settings. The Nursing Program provides eligibility for students to apply for the national exam for the registered nurse license. Licensing requirements are the exclusive responsibility of the State Board of Nursing.

The Associate in Applied Science (AAS) Nursing Program is approved by the Arizona State Board of Nursing and accredited by the National League for Nursing Accrediting Commission (NLNAC), 61 Broadway 33rd Floor, New York, New York 10006, 212.363.5555, ext 153.

Registered Nurse Pathway

The Associate in Applied Science (AAS) degree in Nursing graduate is eligible to apply for licensure as a Registered Nurse (RN). The RN is educated as a generalist who delivers health care to clients and family groups and has competencies related to the art and science of nursing. The RN may be employed in a variety of acute, long term, and community based health care settings. The AAS degree in Nursing provides the graduate with an educational foundation for articulation into the university setting.

The Nursing Program is approved by the Arizona State Board of Nursing and accredited by the National League for Nursing Accrediting Commission (NLNAC), 61 Broadway 33rd Floor, New York, New York 10006, 212.363.5555, ext 153.

Admission Criteria: High School diploma or GED; Formal application and admission to the program is required; A passing score on a nursing program admission test is required to complete an application; Applicants for Advanced Placement must receive a passing score on a practical nursing content exam for placement into Block 3; The final decision rests with the Nursing Program Chair at the College to which the student is accepted; The Nursing Program Chair reserves the right to deny acceptance of an admission application if the applicant was dismissed for issues relating to academic integrity, unsafe patient care, and/or two (2) or more failures from any nursing program; All applicants holding or receiving a certificate as a Nursing Assisting and/or license as a Practical Nurse must remain in good standing with the Regulatory Board. Once enrolled, students receiving any disciplinary actions against their certificate or license must notify the Nursing Program Chair within five (5) school days. The Nursing Program Chair reserves the right to restrict the student's participation in clinical experiences and involvement in patient care until the certificate and/or license is valid and unrestricted.

Program Prerequisites		10-20 Credits

The credit hour range is subject to change depending on the student's educational experiences.

BIO156	Introductory Biology for Allied Health (4) OR	
BIO181	General Biology (Majors) I (4) OR	
	One year of high school biology	0-4
BIO201+	Human Anatomy and Physiology I	4
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1) OR	
	One year of high school chemistry	0-4
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Satisfactory completion of higher level	
	mathematics course	3-5
PSY101	Introduction to Psychology OR	
PSY240+	Developmental Psychology (3)	3

Required Courses		35 Credits
NUR151+	Nursing Theory and Science I	10
NUR171+	Nursing Theory and Science II	8
NUR251+	Nursing Theory and Science III	8
NUR271+	Nursing Theory and Science IV	7
NUR291+	Nursing Clinical Capstone	2

General Education Requirements		16-19 Credits
BIO202+	Human Anatomy and Physiology II (4) AND	
BIO205+	Microbiology (4)	8
CRE101+	Critical and Evaluative Reading I (3) OR	
	Equivalent by assessment	0-3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3)	6
Any general education course in the Humanities and Fine		
Arts area		2

An academic assessment test is required.
After the successful completion of Block 2, the student may register for NUR191 (PN Transition Course, 3 credits) to apply for the National Council Licensure Examination (NCLEX) for the Practical Nurse License.

OCCUPATIONAL SAFETY AND HEALTH TECHNOLOGY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Occupational Safety and Health Technology (34 Credits)

GateWay Community College offers a Certificate of Completion (CCL) in Occupational Safety and Health Technology which will prepare a safety professional to manage health and safety programs that comply with Occupational Safety and Health Act (OSHA) standards in

a variety of settings. Occupational Safety and Health professionals have specialized knowledge of state and federal rules and regulations and code books that serve as safety guidelines. They identify safety problems and develop programs to apply those rules in specific industrial setting. This curriculum provides an overview of the Occupational Safety and Health standards. This curriculum will provide students, through classroom experience and internships, with the knowledge and skills to collect information, analyze accident statistics, develop administrative, engineering and/or training programs to correct safety and health problems, implement and evaluate them.

Required Courses		31 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1) OR	
CHM151+	General Chemistry I (3) AND	
CHM151LL+	General Chemistry I Laboratory (1)	4
OSH105	Construction Safety (2) OR	
FAC/GTC/MIT/OSH106	Industrial Safety (2)	2
HMT/OSH101	Introduction to Occupational Safety, Health, and Environmental Technology	3
OSH102	Introduction to Industrial Hygiene	3
OSH107+	Occupational Safety Principles and Practice	3
OSH203+	Safety Program Management I	3
OSH204+	Health and Safety Program Management II	3
OSH206+	Risk Management and Loss Control	3
OSH290AC+	Case Study and Research Project (3) OR	
IND+++++	Any IND Industry course (3) OR	
FAC+++++	Any FAC Facilities Management course (3) except OSH/FAC/GTC/MIT106 OR	
WRT+++++	Any WRT Water Resource Technology course (3)	3

Restricted Electives		3 Credits

Students should select three (3) credits from the following courses in consultation with a program advisor, except courses used to satisfy the Required Courses area.

OSH+++++	Any OSH Occupational Safety and Health course(s) OR	
FAC+++++	Any FAC Facilities Management course(s) OR	
WRT+++++	Any WRT Water Resource Technology course(s) OR	
IND++++	Any IND Industry course(s)	3

Associate in Applied Science Degree in Occupational Safety and Health Technology (60-74 Credits)

The Occupational Safety and Health program is a two-year Associate in Applied Science (AAS) degree program which will prepare a safety professional to manage health and safety programs that comply with Occupational Safety and Health Act (OSHA) standards in a variety of settings. Occupational Safety and Health professionals have specialized knowledge of state and federal rules and regulations and code books that serve as safety guidelines. They identify safety problems and develop programs to apply those rules in specific industrial setting.

Program Prerequisites		0-8 Credits
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR Satisfactory score on District placement exam OR Higher level mathematics course	0-5

ENG101+	First-Year Composition (3) OR equivalent work experience as determined by Program Director	0-3

Required Courses		33-34 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Laboratory (1) OR	
CHM151+	General Chemistry I (3) AND	
CHM151LL+	General Chemistry I Laboratory (1)	4
GBS110	Human Relations in Business and Industry OR	
MGT101	Techniques of Supervision	3
HMT/OSH101	Introduction to Occupational Safety, Health, and Environmental Technology	3
OSH102	Introduction to Industrial Hygiene	3
OSH105	Construction Safety (2) OR	
FAC/GTC/MIT/OSH106	Industrial Safety (2) OR	
OSH110	OSH Standards for Construction (OSX910) OR	
OSH111	OSH Standards for General Industry (OSX911)	2
OSH107+	Occupational Safety Principles and Practice	3

AND Students must follow one of the following three tracks:

Track 1: Safety Management		12 Credits
OSH203+	Safety Program Management I	3
OSH204+	Health and Safety Program Management II	3
OSH206	Risk Management and Loss Control	3
FAC/OSH240+	Facility Fire System and Codes	3

Track 2: Safety Professional		12 Credits
OSH203+	Safety Program Management I (3) OR	
OSH205+	OSHA General Industry Training for Instructors (OSX951)	3
OSH214+	Machine Guarding (OSX956)	3
OSH218+	Ergonomics	3
OSH220+	Safety and Emergency Management	3
FAC/OSH240+	Facility Fire Systems and Codes	3

Track 3: Construction Specialist		11 Credits
OSH201+	Fall Arrest Systems (OSX962)	3
OSH203+	Safety Program Management I (3) OR	
OSH207+	OSHA Construction Training for Instructors (OSH950)	3
OSH210+	Electrical Standards (OSX961)	3
OSH213+	Excavation, Trenching and Soil Mechanics (OSX960)	2

Restricted Electives		12 Credits

Students should select twelve (12) credits from the following courses in consultation with a program advisor, except courses used to satisfy the Required Courses area.

OSH+++++	Any OSH Occupational Safety and Health course(s) OR	
FAC+++++	Any FAC Facilities Management course(s) OR	
WRT+++++	Any WRT Water Resource Technology course(s) OR	
IND++++	Any IND Industry course(s)	12

General Education Requirements		15-20 Credits
ENG102+	First-Year Composition	3
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	

CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	0-3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent by Assessment	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3

OFFICE TECHNOLOGY
Certificate of Completion

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Office Technology (18 Credits)

The Certificate of Completion (CCL) in Office Technology can be completed in one semester. Many classes are offered on a flexible, open entry schedule. Training in this area provides students with keyboarding, language, customer service, and computer skills. A wide variety of careers exist in the office field. Office technology positions include office assistant, receptionist, and customer service representative. The position offers opportunities to learn and advance in the office environment.

Required Courses		18 Credits
Either OAS101AA or OAS103AA may be waived if 30 wpm (accurately) assessment is achieved. See your advisor for course exception.		
BPC110	Computer Usage and Applications (3) OR	
CIS105	Survey of Computer Information Systems (3) OR	
CIS114DE	Excel Spreadsheet	3
CIS118AB	PowerPoint: Level I (1) AND	
BPC/OAS130DK+	Beginning Word (1) AND	
CIS117AM	Database Management: Microsoft Access - Level I (1)	3
GBS110	Human Relations in Business and Industry	3
OAS108	Business English	3
OAS118	Ten-Key by Touch	1
OAS101AA	Computer Typing I: Keyboard Mastery (1) OR	
OAS103AA+	Computer Typing: Skill Building I (1)	1
OAS101AB+	Computer Typing I: Letters, Tables and Reports	1
TQM101	Quality Customer Service	3

ORGANIZATIONAL MANAGEMENT
Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Organizational Leadership (17-18 Credits)

The Certificate of Completion (CCL) in Organizational Leadership provides students with knowledge and skills needed in today's changing workplace. The program develops leadership and communication skills and techniques for planning, directing, and evaluating business situations. This program also emphasizes procedures for effective allocation of time, money, materials, space, and personnel.

Required Courses		17-18 Credits
BPC110	Computer Usage and Application (3) OR	
CIS105	Survey of Computer Information Systems (3)	3
GBS110	Human Relations in Business and Industry (3) OR	
MGT251	Human Relations in Business (3)	3
GBS151	Introduction to Business	3
GBS233+	Business Communication	3
MGT175	Business Organization and Management (3) OR	
TQM240	Project Management in Quality Organizations (2)	2-3
MGT101	Techniques of Supervision (3) OR	
MGT229	Management and Leadership I (3)	3

Associate in Applied Science Degree in Organizational Management (61 Credits)

The Associate in Applied Science (AAS) in Organizational Management provides students with a customized curriculum specific to the student's individual needs in addition to the knowledge and skills needed in today's changing workplace. The program develops leadership and communication skills and techniques for planning, directing, and evaluating business situations, with an emphasis on effective allocation of time, money, materials, space, and personnel. The curriculum combines coursework in leadership with a general education component.

Required Courses	17-18 Credits
Certificate of Completion in Organizational Leadership	17-18

Restricted Electives	19-22 Credits

Students must choose 19-22 industry/job specific course credits from any MCCCD occupational program and have them approved by a department chair.

These industry/job specific course credits must include a minimum of 9 credits with a common subject.

General Education Requirements	25-27 Credits
Any general education course in the Oral Communication area	3
Any general education course in the Critical Reading area	3
Any general education course in the First-Year Composition area	6
Any general education course in the Humanities and Fine Arts area	3

Any general education course in the Mathematics area		3-5
Any general education course in the Natural Sciences area		4
Any general education course in the Social and Behavioral Sciences area		3

PERIOPERATIVE NURSING

Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Perioperative Nursing (16 Credits)

The Certificate of Completion (CCL) in Perioperative Nursing program is designed to provide a basic foundation of knowledge for the registered nurse interested in working in the operating room setting. Based on safety of patient care the registered nurse will become knowledgeable of the "Association of Operating Room Nurses (AORN) Standards of Practice," perform operating room techniques in the scrub and circulator role and gain exposure to the general surgery arena. Upon successful graduation with a certificate, this program will prepare the registered nurse for employment in an operating room, for orientation with a preceptor, and provide them with knowledge to function while learning specialties of the operating room. The didactic information is provided as an on-line format on Blackboard (Bb). This "work from home" format allows the student to study independently and while maintaining a work schedule. Students will complete hands-on lab experience to familiarize them with duties of the operating room nurse in the perioperative services. Clinical experience will allow the student to gain experience in the scrub and circulating role and learn the circulator's role in caring for the patient in pre-op holding, the operating room and the post-anesthesia care unit. Certification through Certification Board Perioperative Nursing (CNOR) is available after two years experience working in the operating room.

Required Courses		16 Credits
PON210+	PeriOperative Principles I	3
PON212+	PeriOperative Principles II	3
PON214+	PeriOperative Laboratory	4
PON218+	PeriOperative Clinical Practice I	3
PON220+	PeriOperative Clinical Practice II	3

PHYSICAL THERAPIST ASSISTING

Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Associate in Applied Science Degree in Physical Therapist Assisting (66-73 Credits)

The Physical Therapist Assisting program prepares students to use physical therapy modalities and procedures under the direction of a physical therapist. The physical therapist assistant works with patients who have physical impairments requiring physical therapy services to relieve pain and heal damaged tissue; improve range of motion, strength, and functional mobility. Physical therapy treatments include but are not limited to the application of therapeutic modalities; therapeutic exercise including stretching, range of motion, and strengthening; mobility skills including ambulation, transfers, and wheelchair mobility activities; balance exercises; and wound care management.

The Physical Therapist Assisting program is accredited by the Commission on Accreditation in Physical Therapy Education. Only graduates of an accredited training program may practice as a physical therapist assistant in the state of Arizona. Program graduates are eligible to apply for the certification exam administered by the Federation of State Boards of Physical Therapy. A passing score on this exam is required for licensure/certification to practice as a physical therapist assistant in Arizona and in many other states.

Program Prerequisites		7 Credits

Forty (40) hours of paid or volunteer experience in a physical therapy setting supervised by a licensed physical therapist. Successful completion of the following college courses with a cumulative grade point average (GPA) of 2.4 or higher and with a grade of "C" or better.

BIO160	Introduction to Human Anatomy and Physiology (4) OR	
BIO201+	Human Anatomy and Physiology I (4)	4
ENG101+	First-Year Composition	3

Required Courses		55-58 Credits
HCC130	Fundamentals in Health Care Delivery (3) OR Equivalent course as evaluated by the Integrated Competency Assessment Network (ICAN) (0)	0-3
HCC146	Common Medical Terminology for Health Care Workers	2
PTA101+	Survey of Physical Therapy	1.5
PTA103+	Kinesiology	3
PTA104+	Musculo-Skeletal Assessment Techniques	1.5
PTA200+	Patient Mobility Techniques	4
PTA202+	Therapeutic Modalities	5
PTA203+	Clinical Pathology	3
PTA205+	Communication in Physical Therapy	1.5
PTA206+	Clinical Practicum I	3
PTA207+	Clinical Practicum Seminar I	1
PTA208+	Rehabilitation of Special Populations	5
PTA210+	Orthopedic Physical Therapy	4
PTA214+	Electromodalities	2.5
PTA215+	Wound Care for the Physical Therapist Assistant	1
PTA217+	Clinical Neurology	2
PTA230+	Physical Therapy Seminar	2
PTA280+	Clinical Practicum II	3
PTA281+	Clinical Practicum Seminar II	1
PTA290+	Clinical Practicum III	3
PTA292+	Clinical Practicum Seminar III	1
PTA295+	Physical Therapist Assistant Examination Review	2
PSY101	Introduction to Psychology	3

General Education Requirements	11-15 Credits
ENG102+ First-Year Composition	3
CRE101+ College Critical Reading (3) OR	
CRE111+ Critical Reading for Business and Industry (3) OR	
Equivalent by assessment (0)	0-3
Any general education course in the Oral Communication area	3
Any general education course in the Mathematics area	3
Any general education course in the Humanities and Fine Arts area	2-3

POLYSOMNOGRAPHIC TECHNOLOGY
Certificates of Completion
To qualify, students must earn a grade of "C" or better in all courses required within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Polysomnographic Technology (28 Credits)
The Certificate of Completion (CCL) in Polysomnographic Technology includes parallel clinical training in various Valley hospitals and free-standing sleep centers. Polysomnographic Technology Program prepares polysomnographic technologists (sleep technologists) to assist physicians specializing in sleep medicine in the clinical assessment, physiological monitoring and testing, diagnosis, management, and treatment of sleep related disorders with the use of various diagnostic and therapeutic tools providing care to patients of all ages. These tools include but are not limited to polysomnography, positive airway pressure devices, oximetry, capnography, actigraphy, supplemental oxygen, screening devices, and questionnaires. Successful completion of the Certificate of Completion in Polysomnographic Technology Program enables the student to take the Board of Registered Polysomnographic Technologists (BRPT) examination to become a registered Polysomnographic Technologist (RPSGT).

Required Courses		28 Credits
EEG130+	Introduction to EEG	3
HCE113+	Biomedical Electronics I	2
PSG150+	Introduction to Sleep Medicine	4
PSG160+	Polysomnographic Procedures	3
PSG165+	Clinical Polysomnography I	3
PSG170+	Sleep Therapeutics	3
PSG250+	Record Scoring	3
PSG260+	Special Topics in Polysomnography	2
PSG265+	Clinical Polysomnography II	2
PSG275+	Clinical Polysomnography III	3

POWER PLANT TECHNOLOGY
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all required courses.

Associate in Applied Science in Power Plant Technology (60 Credits)
The Associate in Applied Science in Power Plant Technology is designed to provide power plant staff/apprentices with trade-related classroom training as required by the U.S. Department of Labor, Bureau of Apprenticeship and Training, and the State of Arizona, Apprenticeship Division. This program consists of a core curriculum that is common to all power plant apprenticeships. The apprentice selects a track of study - mechanical, electrical, instrumentation, heating ventilation and air conditioning, welding or machining - to complete specialized craft-related training.

Required Courses		21 Credits
BPC101AA	Introduction to Computers I	1
GTC/FAC/OSH106	Industrial Safety	2
GTC/MET107	Technical Mathematics I	3
GTC/MET108+	Technical Mathematics II	3
GTC216	Properties of Materials	3
PPT101	Hand and Power Tools	1
PPT103	Print Reading and Plant Drawings	1
PPT118	Conduct of Maintenance	1
PPT200	Industry Events	1
PPT202	Plant Systems and Components I	2
PPT203+	Plant Systems and Components II	2
PPT204	Measuring and Test Equipment	1

Restricted Electives		17 Credits

Students will select one of the following tracks and complete 17 craft-related credits from the list of restricted elective courses indicated in each specialty track below.

Track I: Power Plan Technology: Mechanical

PPT102	Introduction to Electricity	3
PPT104	Properties of Materials	1
PPT105	Air Compressor Principles	1
PPT106	Diesel Engine Systems	1
PPT107	Lubrication	1
PPT108	Turbines	1
PPT109	Pipefitting Auxiliaries I	2
PPT110	Valves Maintenance I	2
PPT112	Principles of Machining	3
PPT113	Pumps I	2
PPT114	Drive and Gear Components	1
PPT115	Hydraulics and Pneumatics	2
PPT116	Introduction to Welding and Metal Fabrication	3
HEO/PPT117	Forklift Operations	1
PPT119	Instrument Air Compressor Maintenance	2
PPT205	Rigging	2
PPT206	Bearings	1
PPT207	Heat Exchangers	1
PPT208	Thermal Insulation	0.5
PPT209+	Pipefitting Auxiliaries II	2
PPT210+	Valve Maintenance II	3
PPT211	Couplings	0.5
PPT212	Control Valves and Actuators	1
PPT213	Pumps II	3

PPT214	Machine Alignment	3
PPT215	Relief and Safety Valves	1
PPT217	Refueling Overview	1
PPT218	Lathe Operations	2
PPT219	Milling Machine Operations	2

Track II: Power Plant Technology: Electrical

ELC119	Concepts of Electricity and Electronics	3
ELC120	Solid State Fundamentals	3
ELC210	AC Machinery and DC Machinery	3
ELC217	Motor Controls	3
ELC218+	Variable Frequency Drives	3
ELT101	Mathematics for Electronics I	3
ELT102+	Mathematics for Electronics II	3
ELT113+	Basic Electronics	4

Track III: Power Plan Technology: Instrumentation

ELT101	Mathematics for Electronics I	3
ELT102	Mathematics for Electronics II	3
ELT113	Basic Electronics	4
ELT131+	Digital and Logic Circuits	4
ELT195+	Solid State Electronics	4
ELT251+	Electronic Instrumentation	3
NET183AA+	Operating Systems/PC	2
PPT102	Introduction to Electricity	3
PPT115	Hydraulics and Pneumatics	2

Track IV: Power Plant Technology: Heating, Ventilation and Air Conditioning

FAC/HVA101+	Refrigeration Applications and Components I	3
FAC/HVA101LL+	Refrigeration Applications and Components I Lab	1
ELC/FAC/HVA105+	Electricity for Industry	3
ELC/FAC/HVA105LL+	Electricity for Industry Lab	1
ELC/FAC/HVA115+	Motors, Controls and Wiring Diagrams	3
ELC/FAC/HVA115LL+	Motors, Controls and Wiring Diagrams Lab	1
FAC/HVA210+	Facilities Air Conditioning Systems	3
FAC/HVA210LL+	Facilities Air Conditioning Systems Lab	1
HVA112+	Heating and Air Conditioning	3
HVA112LL+	Heating and Air Conditioning Lab	1
HVA143	Load Calculation and Duct Design	3
HVA234+	HVAC and Refrigeration Installation	3
HVA234LL+	HVAC and Refrigeration Installation Lab	1

Track V: Power Plant Technology: Welding

WLD101	Welding I	3
WLD106	Arc Welding	5
WLD201+	Welding II	3
WLD206+	Advanced Welding - Heliarc and Wire Feed	5
WLD208+	Advanced Arc Welding - Certification	5

Track VI: Power Plant Technology: Machining

MET102+	Machine Processes, Theory and Application	5
MET110	Survey of Manufacturing Materials	1
MET112+	Inspection Techniques	3
MET114	Machine Trades Print Reading	1
MET115+	Geometric Dimensioning and Tolerancing - Technologist Level	2
MET140	Computer-Aided Drafting for Manufacturing	3
MET203+	Machine Tools	5

GTC/MET206+	CNC Programming	3
GTC236	CAD/CAM Computer Numerical Control (CNC) Programming	3
MET260+	Tooling and Fixturing	3
MET264+	Manufacturing Process Planning	3

General Education Requirements   **22 Credits**

COM100	Introduction to Human Communication (3) OR	
COM11+	Interpersonal Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by assessment.	3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical Writing (3)	6
PHS110+	Fundamentals of Physical Science.	4
	Any general education course in the Humanities and Fine Arts area	3
	Any general education course in the Social and Behavioral Sciences area	3

PRODUCTION TECHNOLOGY
Certificates of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Production Technology: CNC Technology (24 Credits)

The Certificate of Completion (CCL) Production Technology: CNC Technology program is designed for students to obtain the skills required to be considered as a Computer Numerical Control CNC technician in a manufacturing environment.

Program Prerequisites   **0-6 Credits**

MAT082	Basic Arithmetic (3) OR Higher level mathematics course OR Satisfactory score on District Placement exam AND A minimum of one-year documented work experience in the Manufacturing field	0-3
MET109	Machine Trades Print Reading (3) OR One year direct work experience with Mechanical machine drawing OR Satisfactory placement on departmental placement exam	0-3

Required Courses   **24 Credits**

MET112+	Inspection Techniques	3
MET113+	Applied Geometric Dimensioning and Tolerancing	3
GTC/MET206+	CNC Programming	3
MET207+	CNC Mill: Operator Training I	3
MET208+	CNC Lathe: Operator Training I	3
MET215+	Advanced CNC Operation	3
MET231+	Manufacturing Processes and Materials	3
MET286AE+	Solid Design I: Part Modeling: SolidWorks (3) OR	
MET286AE+	Solid Design I: Unigraphics NX (3)	3

Certificate of Completion in Production Technology: Quality Assurance (24 Credits)

The Certificate of Completion (CCL) in Production Technology: Quality Assurance program is designed for students to obtain the skills required to be considered as a quality technician in a manufacturing environment.

Program Prerequisites   **0-3 Credits**

MET109	Machine Trades Print Reading (3) OR	
	one year direct work experience with Mechanical machine drawing OR	
	Satisfactory placement on departmental placement exam	0-3

Required Courses   **24 Credits**

MET112+	Inspection Techniques	3
MET113+	Applied Geometric Dimensioning and Tolerancing	3
MET119	Workplace Quality Systems	3
MET220	Fundamentals of Coordinate Measuring Machines (CMM)	3
MET224+	Applied Statistical Process Control Methods	3
MET231+	Manufacturing Processes and Materials	3
MET254+	Lean and Six Sigma Applied Concepts	3
MET284+	Advanced Quality Process Methods	3

Associate in Applied Science in Production Technology (66-72 Credits)

The Associate in Applied Science (AAS) in Production Technology program prepares students for employment in various engineering, manufacturing and quality disciplines related to productivity improvement, in a variety of manufacturing industries. Students develop skills with a specialization emphasis in Computer Numerical Control Computer Aided Design/Computer Aided Manufacturing Programming Technician (CNC CAD/CAM), and Quality Systems and Process Improvement. The program of study includes quality practices and leadership principles with an emphasis on skills and knowledge essential for technicians who will be working in the related disciplines.

Upon completion of the Associate in Applied Science Degree, a student will have acquired a working knowledge of how to function as a technician and perform duties typically associated in Production Technology as a CNC technician with Quality Systems training and Process Improvement expertise.

Program Prerequisites   **0-3 Credits**

MET109	Machine Trades Print Reading (3) OR	
	one year direct work experience with Mechanical machine drawing OR	
	Satisfactory placement on departmental placement exam	0-3

Required Courses   **45 Credits**

MET112+	Inspection Techniques	3
MET113+	Geometric Dimensioning and Tolerancing	3
MET119	Workplace Quality Systems	3
GTC/MET206	CNC Programming	3
MET207+	CNC Mill: Operator Training I	3
MET208+	CNC Lathe: Operator Training I	3
MET215+	Advanced CNC Operation	3

MET220+	Fundamentals of Coordinate Measuring Machines (CMM)	3
MET224+	Applied Statistical Process Control Methods	3
MET231+	Manufacturing Processes and Materials	3
MET236AD+	CAD/CAM Computer Numerical Control (CNC) Programming: MasterCam	3
MET246AD+	Advanced CAD/CAM CNC Programming: MasterCam	3
MET254+	Lean and Six Sigma Applied Concepts	3
MET284+	Advanced Quality Process Methods	3
MET286AE+	Solid Design I: Part Modeling: Solid Works	3

General Education Requirements   **21-27 Credits**

ENG101	First Year Composition (3) OR	
ENG107+	First Year Composition for ESL (3)	3
ENG111+	Technical and Professional Writing (3)	3
COM100	Introduction to Human Communication (3) OR	
COM100AA	Introduction to Human Communication Part I (1) AND	
COM100AB	Introduction to Human Communication Part II (1) AND	
COM100AC	Introduction to Human Communication Part III (1) OR	
COM110	Interpersonal Communication (3) OR	
COM110AA	Interpersonal Communication Part I (1) AND	
COM110AB	Interpersonal Communication Part II (1) AND	
COM110AC	Interpersonal Communication Part III (1)	3
CRE101+	Critical and Evaluative Reading I OR	
CRE111+	Reading for Business and Industry OR	
	Equivalent by Assessment	0-3
MAT120	Intermediate Algebra (5) OR	
MATI21	Intermediate Algebra (4) OR	
MAT122	Intermediate Algebra (3) OR	
	Equivalent courses OR	
	Satisfactory completion of a higher level mathematics course	3-5
	Any general education course in the Humanities and Fine Arts area	2-3
	Any general education course in the Social and Behavioral Science area	3
	Any general education course in the Natural Science area	4

RADIATION THERAPY

Certificate of Completion

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Certificate of Completion in Radiation Therapy (54 Credits)

The Certificate of Completion (CCL) in Radiation Therapy program prepares participants for an entry level position as a Radiation Therapist to be members of the health care team using ionizing radiation in the treatment of cancer and some benign diseases. A primary responsibility in radiation therapy is the assessment of the patient prior to and during treatment to ensure quality of care. Attention to detail, accuracy, empathy for others, integrity and high ethical standards are essential

characteristics in the field. In addition, knowledge of anatomy, physiology and physics is applied and utilized daily. Daily duties in radiation therapy include administering radiation treatments, treatment documentation, immobilization construction, dosage calculations, patient assessment, treatment planning and patient education.

The program includes didactic instruction and requires participation in a clinical internship to apply knowledge in a real life situation. Program graduates are eligible to apply to take the national certification exam offered by the American Registry of Radiologic Technologists (ARRT).

Required Courses   **54 Credits**

DMI/ICE220+	Sectional Anatomy	3
RTT101+	Foundations in Radiation Therapy	2
RTT110+	Radiation Therapy Patient Care	2
RTT115+	Radiobiology for Radiation Therapy	2
RTT121+	Radiation Therapy I: Physics and Calculations	3
RTT122+	Radiation Therapy II: Physics and Calculations	3
RTT130+	Clinical Internship I	5
RTT131+	Clinical Internship II	5
RTT132+	Clinical Internship III	5
RTT133+	Internship Seminar I	2
RTT134+	Internship Seminar II	2
RTT135+	Internship Seminar III	2
RTT141+	Dosimetry/Treatment Planning	3
RTT145+	Radiation Oncology	4
RTT150+	Clinical Radiation Therapy I	3
RTT151+	Clinical Radiation Therapy II	2
RTT155+	Professional Issues in Radiation Therapy	2
RTT156+	Quality Control/Organizational Issues	2
RTT160+	Seminar in Radiation Therapy	2

REALTIME REPORTING
Certificates of Completion
Associate in Applied Science Degrees
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

REALTIME REPORTING - BROADCAST CAPTIONING
Certificate of Completion in Realtime Reporting - Broadcast Captioning (61 Credits)
The Certificate of Completion (CCL) in Realtime Reporting-Broadcast Captioning program prepares graduates for employment as broadcast captioners, also known as closed captioners. Students are trained to master the realtime machine shorthand skills, and computer technology to provide captions for television, conventions, graduations, and sporting events. Program emphasis is on computer dictionary management and machine shorthand to provide instantaneous, realtime translation in the broadcast captioning environment. Employment opportunities are abundant worldwide. GateWay Community College is the only community college in Arizona to offer this specialized training. Students receive instruction in realtime machine shorthand at a state-of-the-art technological facility.

Program Prerequisites
1. High School graduation transcript or GED
2. Keyboarding at 45 words per minute
3. English 101 Eligibility

Required Courses   **61 Credits**

CIS105	Survey of Computer Information Systems	3
OAS108	Business English	3
OAS181	Medical Office Vocabulary	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary	2
RTR201AC+	Realtime Reporting I: Question/Answer	2
RTR202AA+	Realtime Reporting II: Literary	2
RTR202AC+	Realtime Reporting II: Question/Answer	2
RTR203AA+	Realtime Reporting III: Literary	2
RTR203AC+	Realtime Reporting III: Question/Answer	2
RTR204AA+	Realtime Reporting IV: Literary	2
RTR205AA+	Realtime Reporting V: Literary	2
RTR206AA+	Realtime Reporting VI: Literary	2
RTR207+	Captioning Environment I	5
RTR217+	Captioning Environment II	5
RTR227+	Captioning Environment III	5
RTR237+	Broadcast Captioning Lab	1
RTR241+	Broadcast Captioning Internship	1
RTR245+	Broadcast Captioning Technology	4

Certificate of Completion in Realtime Reporting - Advanced Placement Broadcast Captioning (21 Credits)
The Certificate of Completion (CCL) in Realtime Reporting-Broadcast Captioning program prepares graduates for employment as broadcast captioners, also known as closed captioners. Students are trained to master the realtime machine shorthand skills, and computer technology to provide captions for television, conventions, graduations, and sporting events. Program emphasis is on computer dictionary management and machine shorthand to provide instantaneous, realtime translation in the broadcast captioning environment. Employment opportunities are worldwide. GateWay Community College is the only community college in Arizona to offer this specialized training. Students receive instruction in realtime machine shorthand at a state-of-the-art technological facility.

Program Prerequisites
1. High School graduation transcript or GED
2. Keyboarding at 45 words per minute
3. English 101 Eligibility
4. Machine Shorthand speed: 160 wpm Question/Answer and 180 wpm Literary

Required Courses   **21 Credits**

RTR207+	Captioning Environment I	5
RTR217+	Captioning Environment II	5
RTR227+	Captioning Environment III	5
RTR237+	Broadcast Captioning Lab	1
RTR241+	Broadcast Captioning Internship	1
RTR245+	Broadcast Captioning Technology	4

Associate in Applied Science Degree in Realtime Reporting - Broadcast Captioning (85 Credits)

The Realtime Reporting - Broadcast Captioning program prepares graduates for employment as broadcast captioners, also known as closed captioners. Students are trained to master the realtime machine shorthand skills, and computer technology to provide captions for television, conventions, graduations, and sporting events. Program emphasis is on computer dictionary management and machine shorthand to provide instantaneous, realtime translation in the broadcast captioning environment. Employment opportunities are worldwide. GateWay Community College is the only community college in Arizona to offer this specialized training. Students receive instruction in realtime machine shorthand at a state-of-the-art technological facility.

Program Prerequisites
1. High school graduation transcript
2. Keyboarding at 45 words per minute
3. English 101 eligibility

Required Courses — 61 Credits

CIS105	Survey of Computer Information Systems	3
OAS108	Business English	3
OAS181	Medical Office: Vocabulary	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary	2
RTR201AC+	Realtime Reporting I: Question/Answer	2
RTR202AA+	Realtime Reporting II: Literary	2
RTR202AC+	Realtime Reporting II: Question/Answer	2
RTR203AA+	Realtime Reporting III: Literary	2
RTR203AC+	Realtime Reporting III: Question/Answer	2
RTR204AA+	Realtime Reporting IV: Literary	2
RTR205AA+	Realtime Reporting V: Literary	2
RTR206AA+	Realtime Reporting VI: Literary	2
RTR207+	Captioning Environment I	5
RTR217+	Captioning Environment II	5
RTR227+	Captioning Environment III	5
RTR237+	Broadcast Captioning Lab	1
RTR241+	Broadcast Captioning Internship	1
RTR245+	Broadcast Captioning Technology	4

General Education Requirements — 24 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3)	3
CRE101+	Critical and Evaluative Reading I (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3)	3
MAT102+	Mathematical Concepts/Applications (3) OR	
	Equivalent by assessment OR	
	Satisfactory completion of a higher level mathematics course	3
PSY101	Introduction to Psychology	3
BIO160+	Introduction to Human Anatomy and Physiology	4
Any general education course in the Humanities and Fine Arts area		2

REALTIME REPORTING - CART
Certificate of Completion in Realtime Reporting - CART (65 Credits)

Communication Access Realtime Translation (CART) providers use realtime machine shorthand and computer technology to provide instantaneous conversion of speech into written text for the deaf and hard-of-hearing. Students in this program are trained in mastering the machine shorthand speed and computer software utilized in realtime translation. Students also learn beginning sign language, vocabulary, and language used in academic settings. Employment opportunities in this field are abundant nationwide. GateWay Community College is the only community college in Arizona to offer this specialized training. GateWay offers excellent instruction in realtime machine shorthand and has a state-of-the-art technological facility.

Program Prerequisites
1. High School graduation transcript or GED
2. Keyboarding at 45 words per minute
3. English 101 Eligibility

Required Courses — 65 Credits

CIS105	Survey of Computer Information Systems	3
OAS108	Business English	3
OAS181	Medical Office Vocabulary	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary	2
RTR201AC+	Realtime Reporting I: Question/Answer	2
RTR202AA+	Realtime Reporting II: Literary	2
RTR202AC+	Realtime Reporting II: Question/Answer	2
RTR203AA+	Realtime Reporting III: Literary	2
RTR203AC+	Realtime Reporting III: Question/Answer	2
RTR204AA+	Realtime Reporting IV: Literary	2
RTR205AA+	Realtime Reporting V: Literary	2
RTR206AA+	Realtime Reporting VI: Literary	2
RTR208+	CART Environment I	5
RTR218+	CART Environment II	5
RTR221+	Realtime CART Internship	1
RTR225+	Realtime CART Technology	4
RTR228+	CART Environment III	5
RTR238+	CART Environment Lab	1
SLG101+	American Sign Language I	4

Certificate of Completion in Realtime Reporting - Advanced Placement CART (25 Credits)

The Certificate of Completion (CCL) in Realtime Reporting CART Advanced Placement program will prepare graduates for employment as CART providers, who provide one-on-one captioning for deaf and hard-of-hearing students in high school and colleges. CART providers also work with people who are learning English as a second language. CART providers may accompany deaf and hard-of-hearing clients to conventions, business meetings, doctor appointments, workshops, and where communication access is needed. Employment opportunities are abundant nationwide. GateWay Community College is the only program in Arizona to offer this specialized training. Students receive instruction in realtime machine shorthand in a state-of-the-art facility.

Program Prerequisites

1. High School graduation transcript or GED
2. Keyboarding at 45 words per minute
3. English 101 Eligibility
4. Machine Shorthand speed: 160 wpm Question/Answer and 180 wpm Literary

Required Courses		25 Credits
RTR208+	CART Environment I	5
RTR218+	CART Environment II	5
RTR221+	Realtime CART Internship	1
RTR225+	Realtime CART Technology	4
RTR228+	CART Environment III	5
RTR238+	CART Environment Lab	1
SGL101	American Sign Language	4

Associate in Applied Science Degree in Realtime Reporting – CART (89 Credits)

Communication Access Realtime Translation (CART) providers use realtime machine shorthand and computer technology to provide instantaneous conversion of speech into written text for the deaf and hard-of-hearing. CART providers also work with people who are learning English as a second language and high school and college students who are hearing impaired. Students in this program are trained in mastering the machine shorthand speed and computer software utilized in realtime translation. Students also learn beginning sign language, vocabulary, and language used in academic settings. Employment opportunities in this field are abundant nationwide. GateWay Community College is the only community college in Arizona to offer this specialized training. GateWay offers excellent instruction in realtime machine shorthand and has a state-of-the-art technological facility.

Program Prerequisites

1. High school graduation transcript
2. Keyboarding at 45 words per minute
3. English 101 eligibility

Required Courses		65 Credits
CIS105	Survey of Computer Information Systems	3
OAS108	Business English	3
OAS181	Medical Office: Vocabulary	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary	2
RTR201AC+	Realtime Reporting I: Question/Answer	2
RTR202AA+	Realtime Reporting II: Literary	2
RTR202AC+	Realtime Reporting II: Question/Answer	2
RTR203AA+	Realtime Reporting III: Literary	2
RTR203AC+	Realtime Reporting III: Question/Answer	2
RTR204AA+	Realtime Reporting IV: Literary	2
RTR205AA+	Realtime Reporting V: Literary	2
RTR206AA+	Realtime Reporting VI: Literary	2
RTR208+	CART Environment I	5
RTR218+	CART Environment II	5
RTR221+	Realtime CART Internship	1
RTR225+	Realtime CART Technology	4
RTR228+	CART Environment III	5
RTR238+	CART Environment Lab	1
SLG101	American Sign Language I	4

General Education Requirements		24 Credits
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3)	3
CRE101+	Critical and Evaluative Reading I (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	3
MAT102+	Mathematical Concepts/Applications (3) OR	
	Equivalent by Assessment OR	
	Satisfactory completion of a higher level	
	mathematics course	3
PSY101	Introduction to Psychology	3
BIO160	Introduction to Human Anatomy and Physiology	4
Any general education course in the Humanities and Fine Arts area		2

REALTIME REPORTING - JUDICIAL
Certificate of Completion in Realtime Reporting - Judicial (68 Credits)

Court reporting is an expanding profession that offers excellent employment opportunities for both men and women. The work is interesting and challenging. Court reporters work for the government, courts, large business corporations, freelance reporting agencies, and television stations. GateWay Community College is one of the few community colleges across the nation to offer a National Court Reporters Association certified court reporting program which includes Realtime machine shorthand, computer theory, speed development, transcription, court practice and overview in video application. Upon completion of the program, students will be qualified to enter the court reporting profession subject to any and all state requirements. In addition, students are assisted in preparing for the National Court Reporters Association Certificate of Proficiency and Certificate of Merit Examination. Students whose personal interests and needs can be met by concentration on a core program of Court Reporting courses and who do not wish an associate in applied science may receive a certificate after completion of the courses listed.

Program Prerequisites	1-3 Credits

1. 45 wpm typing speed AND
2. ENGLISH ASSESSMENT - Eligibility for ENG101 or permission of department/division AND
3. Transcript(s) of high school graduation or equivalent must be on file in the Admissions and Records Office

Any student not meeting the prerequisite typing speed of 45 wpm may choose from the following courses to assist in attaining the required skill level for program entry:

OAS101	Computer Typing I: Keyboarding and Formatting OR	
	Equivalent (3) OR	
OAS103AA+	Computer Typing: Skill Building I (1) OR	
	Equivalent OR	
OAS102+	Computer Typing II: Document Production (3) OR	
	Equivalent 1-3	

Required Courses		68 Credits
LAS101+ I	Introduction to Law	3
OAS103AA+***	Computer Typing: Skill Building I	1
OAS108	Business English	3
BPC135DD +	WordPerfect: Level I (2) OR	

BPC/OAS135DK+	Word: Level I (2)	2
OAS181	Medical Office: Vocabulary (3) OR	
HLR170	Medical Terminology for Allied Health	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR 197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary (2) AND	
RTR201AB+	Realtime Reporting I: Jury Charge (2) AND	
RTR201AC+	Realtime Reporting I: Question/Answer (2)	6
RTR202AA+	Realtime Reporting II: Literary (2) AND	
RTR202AB+	Realtime Reporting II: Jury Charge (2) AND	
RTR202AC+	Realtime Reporting II: Question/Answer (2)	6
RTR203AA+	Realtime Reporting III: Literary (2) AND	
RTR203AB+	Realtime Reporting III: Jury Charge (2) AND	
RTR203AC+	Realtime Reporting III: Question/Answer (2)	6
RTR204AA+	Realtime Reporting IV: Literary (2) AND	
RTR204AB+	Realtime Reporting IV: Jury Charge (2) AND	
RTR204AC+	Realtime Reporting IV: Question /Answer (2)	6
RTR205AA+	Realtime Reporting V: Literary (2) AND	
RTR205AB+	Realtime Reporting V: Jury Charge (2) AND	
RTR205AC+	Realtime Reporting V: Question/Answer (2)	6
RTR206AA+	Realtime Reporting VI: Literary (2) AND	
RTR206AB+	Realtime Reporting VI: Jury Charge (2) AND	
RTR206AC+	Realtime Reporting VI: Question/Answer (2)	6
RTR209+	Judicial Procedures for Realtime Reporting	3
RTR211+	Judicial Internship	1
RTR215+	Computer-Aided Transcription	3

*** Typing course may be waived if the student can pass two 5-minute typing tests each at 60 net wpm with a maximum of five errors. Students may take OAS103AA if desired to build keyboarding speed.*

Associate in Applied Science Degree in Realtime Reporting-Judicial (92 Credits)

Court reporting is an expanding profession that offers excellent employment opportunities for both men and women. The work is interesting and challenging. Court reporters work for the government, courts, large business corporations, freelance reporting agencies, and television stations. GateWay Community College is one of the few community colleges across the nation to offer a National Court Reporters Association certified court reporting program which includes Realtime machine shorthand, computer theory, speed development, transcription, court practice and overview in video application. Upon completion of the program, students will be qualified to enter the court reporting profession subject to any and all state requirements. In addition, students are assisted in preparing for the National Court Reporters Association Certificate of Proficiency and Certificate of Merit Examination.

Program Prerequisites   1-3 Credits
1.   45 wpm typing speed AND
2.   English Assessment - Eligibility for ENG101 or permission of department/division AND
3.   Transcript(s) of high school graduation or equivalent must be on file in the Admissions and Records Office

Any student not meeting the prerequisite typing speed of 45 wpm may choose from the following courses to assist in attaining the required skill level for program entry:

OAS101	Computer Typing I: Keyboarding and Formatting (3) OR Equivalent OR	
OAS103AA+	Computer Typing: Skill Building I (1) OR Equivalent OR	
OAS102+	Computer Typing II: Document Production (3) OR Equivalent	1-3

Required Courses   68 Credits

LAS101	Introduction to Law	3
OAS103AA+***	Computer Typing: Skill Building I	1
OAS108	Business English	3
BPC135DD +	WordPerfect: Level I (2) OR	
BPC/OAS135DK+	Word: Level I (2)	2
OAS181	Medical Office: Vocabulary (3) OR	
HLR170	Medical Terminology for Allied Health	3
RTR101+	Realtime Machine Shorthand I	6
RTR102+	Realtime Machine Shorthand II	6
RTR 197+	Realtime Reporting Lab	1
RTR201AA+	Realtime Reporting I: Literary (2) AND	
RTR201AB+	Realtime Reporting I: Jury Charge (2) AND	
RTR201AC+	Realtime Reporting I: Question/Answer (2)	6
RTR202AA+	Realtime Reporting II: Literary (2) AND	
RTR202AB+	Realtime Reporting II: Jury Charge (2) AND	
RTR202AC+	Realtime Reporting II: Question/Answer (2)	6
RTR203AA+	Realtime Reporting III: Literary (2) AND	
RTR203AB+	Realtime Reporting III: Jury Charge (2) AND	
RTR203AC+	Realtime Reporting III: Question/Answer (2)	6
RTR204AA+	Realtime Reporting IV: Literary (2) AND	
RTR204AB+	Realtime Reporting IV: Jury Charge (2) AND	
RTR204AC+	Realtime Reporting IV: Question /Answer (2)	6
RTR205AA+	Realtime Reporting V: Literary (2) AND	
RTR205AB+	Realtime Reporting V: Jury Charge (2) AND	
RTR205AC+	Realtime Reporting V: Question/Answer (2)	6
RTR206AA+	Realtime Reporting VI: Literary (2) AND	
RTR206AB+	Realtime Reporting VI: Jury Charge (2) AND	
RTR206AC+	Realtime Reporting VI: Question/Answer (2)	6
RTR209+	Judicial Procedures for Realtime Reporting	3
RTR211+	Judicial Internship	1
RTR215+	Computer-Aided Transcription	3

*** Typing course may be waived if the student can pass two 5-minute typing tests each at 60 net wpm with a maximum of five errors. Students may take OAS103AA if desired to build keyboarding speed.*

General Education Requirements   24 Credits

ENG101+	First-Year Composition (3) AND	3
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	3
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3)	3
CRE101+	Critical and Evaluative Reading I (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by Assessment	3
MAT102+	Mathematical Concepts/Applications (3) OR Equivalent by assessment OR Satisfactory completion of a higher level mathematics course	3
BIO160+	Introduction to Human Anatomy and Physiology	4
PSY101	Introduction to Psychology	3
	Any general education course in the Humanities and Fine Arts area	2

REALTIME REPORTING - SCOPING
Certificate of Completion in Realtime Reporting – Scoping (30 Credits)

The Certificate of Completion (CCL) in Realtime Reporting-Scoping will provide students with the knowledge and skill of reading machine shorthand notes and using computer-aided transcript software to work in conjunction with court reporters in preparing text and transcripts. The curriculum provides instruction in realtime machine shorthand theory, use of computer-aided transcription software, and court procedures. English grammar, spelling, punctuation and proofreading, medical vocabulary, basic law and word processing skills are reinforced within the program curriculum as well. Upon graduation, students will be able to gain employment as a scopist for realtime reporters.

Program Notes: Students must pass two timed writings of five minutes each with a minimum speed of 45 wpm in order to complete this certificate.

Required Courses		30 Credits
BPC135DD+	WordPerfect: Level I	2
LAS101+	Introduction to Law	3
OAS108	Business English	3
OAS181	Medical Office: Vocabulary	3
CTR/RTR101+	Realtime Machine Shorthand I	6
CTR/RTR102+	Realtime Machine Shorthand II	6
CTR/RTR197+	Realtime Reporting Lab	1
CTR/RTR209+	Judicial Procedures for Realtime Reporting	3
CTR/RTR215+	Computer-Aided Transcription	3

RESPIRATORY CARE
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all required courses within the program.

Division: Health Sciences
Chair: Edward Hoskins

Associate in Applied Science Degree in Respiratory Care (72-73 Credits)

The Associate in Applied Science (AAS) Degree in Respiratory Care is a full-time or part-time program during the day and includes parallel clinical training in various Valley hospitals. Certified Respiratory Therapists with three years of work experience might be able to fulfill all or part of their clinical training in a non-traditional manner.

Successful completion of the AAS Degree Respiratory Care Program enables the student to take the National Board of Respiratory Care Entry Level examination and the National Board for Respiratory Care Advanced Practitioner Examination.

Certified and Registered Respiratory Therapists assess, teach and treat patients with pulmonary problems in the hospital critical care areas, in the patient's home or in physicians' offices or clinics. The employment outlook for practitioners in Arizona is good.

Program Prerequisites		13-19.5 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
CRE101+	Critical and Evaluative Reading I (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by assessment	3
ENG101+	First-Year Composition	3
MAT122+	Intermediate Algebra (3) OR	
	Satisfactory completion of a higher level mathematics course	3

Students must also select one of the following 2 options.
Option I:
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District OR

Option 2:

HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
EMT/HCC/RES109	CPR for Health Care Provider OR Equivalent	0.5
HCC146	Common Medical Terminology for Health Care Workers	2
HCC164+	Pharmacology for Allied Health	0.5
HCC200+	Basic Client Care for Allied Health	0.5

Required Courses		61 Credits
BIO205+	Microbiology (4) OR	
RES200+	Microbiology for Respiratory Care	4
CHM130+	Fundamental Chemistry	3
CHM130LL+	Fundamental Chemistry Lab	1
HCC204+	Clinical Pathophysiology	3
HCC208+	Health Care Leadership	1
NCE173+	LPN–Venipuncture	1
RES130+	Respiratory Care Fundamentals I	5
RES133+	Respiratory Care Clinical Seminar	3
RES134+	Advanced Respiratory Care Pharmacology	2
RES136+	Applied Biophysics for Respiratory Care	3
RES140+	Respiratory Care Fundamentals II	5
RES142+	Respiratory Care Clinical I	3
RES220+	Respiratory Care Fundamentals III	5
RES226+	Respiratory Care Clinical II	3
RES230+	Respiratory Care Fundamentals IV	4
RES232+	Respiratory Care Clinical III	3
RES235+	Respiratory Care Pharmacology II	2
RES240+	Respiratory Physiology	3
RES270+	Neonatal and Pediatric Respiratory Care	2
RES280+	Respiratory Care Review	2
RES291+	Respiratory Care Advanced Life Support	1
RES297+	Respiratory Care Seminar	2

General Education Requirements	11-12 Credits
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3)	3
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	3
PSY101	Introduction to Psychology	3
Any general education course in the Humanities and Fine		
Arts area		2-3

RETAIL MANAGEMENT
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Retail Management (33 Credits)

The Retail Management Certificate of Completion (CCL) is designed to prepare individuals working in the food industry, and related fields, for the management challenges of the future. The curriculum encompasses several business essentials and also emphasizes the skill sets needed for effective management and communication in the work environment.

Required Courses	33 Credits
ACC111	Accounting Principles I	3
BPC110	Computer Usage and Applications (3) OR	
CIS105	Survey of Computer Information Systems (3)	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3)	3
GBS110	Human Relations in Business & Industry (3) OR	
MGT251+	Human Relations in Business (3)	3
GBS131	Business Calculations (3) OR	
MAT102+	Mathematical Concepts and Applications (3)	3
GBS233+	Business Communication	3
COM110	Interpersonal Communication (3) OR	
IND133	Speaking in Business (3)	3
MGT101	Techniques of Supervision (3) OR	
MGT229	Management and Leadership I (3)	3
MGT179	Utilizing the Human Resources Department (3) OR	
MGT276	Personnel/Human Resources Management (3)	3
MKT268	Merchandising 3	
MKT271	Principles of Marketing	3

Associate in Applied Science in Retail Management (64 Credits)

The Retail Management degree is designed to prepare individuals working in the retail management, food industry, and related fields, for the mid-level management position challenges of the future. The curriculum encompasses business essentials and also emphasizes the skill sets needed for effective management and communication in the work environment. Instruction will provide the background and knowledge necessary for students to develop the judgment skills they must exercise as business managers.

Required Courses	39 Credits
ACC111	Accounting Principles I	3
ACC230+	Uses of Accounting Information I	3
ACC240+	Uses of Accounting Information II	3
BPC110	Computer Usage and Applications (3) OR	
CISI05	Survey of Computer Information Systems (3)	3
COM110	Interpersonal Communication (3) OR	
IND133	Speaking in Business (3)	3
GBS110	Human Relations in Business and Industry (3) OR	
MGT251	Human Relations in Business (3)	3
GBS131	Business Calculations (3) OR	
GBS161+	Mathematics of Business (3)	3
GBS205	Legal, Ethical, & Regulatory Issues in Business	3
GBS233+	Business Communication	3
MGT101	Techniques of Supervision (3) OR	
MGT229	Management and Leadership I (3)	3
MGT179	Utilizing the Human Resources Department (3) OR	
MGT276	Personnel/Human Resources Management (3)	3
MKT268	Merchandising 3	
MKT271	Principles of Marketing	3

General Education Requirements	25 Credits
COM230+	Small Group Communication	3
CRE101+	Critical and Evaluative Reading I (3) OR	
	Equivalent by assessment	3
ENG101+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG108+	First-Year Composition for ESL (3) OR	
ENG111+	Technical and Professional Writing (3)	6

ENG102 or ENG108 recommended for students pursuing a BAS degree at an Arizona university.

MAT102+	Mathematical Concepts/Applications (3) OR	
	Satisfactory completion of a higher level mathematics course	3
SBU200	Society and Business	3
Any general education course in the Humanities and Fine		
Arts area		3
Any general education course in the Natural Sciences area		4

SURGICAL TECHNOLOGY
Certificate of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Health Science
Chair: Edward Hoskins

Certificate of Completion in Surgical Technology (45.5-61 Credits)

The Certificate of Completion (CCL) in Surgical Technology Program is designed for students with an interest in working in the surgical setting and caring for patients that are undergoing a surgical procedure. Students will apply manual dexterity and knowledge of surgical technology under the direction of a surgeon, and in conjunction with the surgical team. At the completion of the program, graduates may seek employment in a hospital, surgical center, or other outpatient settings.

Program Prerequisites		5.5-19 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
BPC/CIS+++++	Any BPC/CIS prefix course	0.5
HCC164+	Pharmacology for Allied Health	0.5
HCC200+	Basic Client Care for Allied Health	0.5
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR	
MAT102+	Mathematical Concepts/Applications (3) OR satisfactory score on District placement exam OR satisfactory completion of a higher level mathematics course	0-5
RDG091+	College Preparatory Reading (3) OR Placement in CRE101 or CRE111 on District placement test	0-3

Students must also select one of the following 2 options.
Option I:
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District.

Option II:
HCC109	CPR for Health Care Provider (0.5) OR Proof of current American Heart Association Health Care Provider CPR card (0)	0-0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC146	Common Medical Terminology for Health Care Workers	2

Required Courses		40-42 Credits
BIO162	Microbiology Concepts for Allied Health (2) OR	
BIO205+	Microbiology (4)	2-4
PHY101+	Introduction to Physics	4
SGT103AA+	Surgical Asepsis	1
SGT103AB+	Sterilization and Disinfection	1
SGT104AA	Basic Surgical Instrumentation	1
SGT104AB	Speciality Surgical Instrumentation	1
SGT105	Surgical Technology Pre-Clinical	1
SGT110+	Basic Surgical Procedures	5
SGT115+	Operating Room Orientation	1
SGT120+	Operating Room Practicum I	2
SGT150+	Medical Terminology for Surgical Technology	1
SGT208+	Surgical Patient Care Concepts	1
SGT210+	Advanced Surgical Procedures	5
SGT217+	Pharmacology for Surgical Technology	2
SGT220+	Operating Room Practicum II	3
SGT225+	Operating Room Practicum III	3
SGT227+	Operating Room Practicum IV	3
SGT275+	Certification Examinations Preparation	3

Associate in Applied Science Degree in Surgical Technology (62.5-84 Credits)

The Associate in Applied Science (AAS) in Surgical Technology program is designed for students with an interest in working in the surgical setting and caring for patients that are undergoing a surgical procedure. Students will apply manual dexterity and knowledge of surgical technology under the direction of a surgeon, and in conjunction with the surgical team. At the completion of the program, graduates may seek employment in a hospital, surgical center, or other outpatient settings.

Program Prerequisites		5.5-19 Credits
BIO160	Introduction to Human Anatomy and Physiology	4
BPC/CIS+++++	Any BPC/CIS prefix course	0.5
HCC164+	Pharmacology for Allied Health	0.5
HCC200+	Basic Client Care for Allied Health	0.5
MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR	
MAT102+	Mathematical Concepts/Applications (3) OR satisfactory score on District placement exam OR satisfactory completion of a higher level mathematics course	0-5
RDG091+	College Preparatory Reading (3) OR Placement in CRE101 or CRE111 on District placement test	0-3

Students must also select one of the following 2 options.
Option I:
Completion of an Associate in Applied Science degree or higher degree in a health science discipline from a regionally accredited institution of higher education recognized by Maricopa County Community College District.

Option II:

HCC109	CPR for Health Care Provider (0.5) OR	
	Proof of current American Heart Association Health Care Provider CPR card (0)	0-0.5
HCC130	Fundamentals in Health Care Delivery (3) OR	
HCC130AA	Health Care Today (0.5) AND	
HCC130AB	Workplace Behaviors in Health Care (0.5) AND	
HCC130AC	Personal Wellness and Safety (0.5) AND	
HCC130AD	Communication and Teamwork in Health Care Organizations (0.5) AND	
HCC130AE	Legal Issues in Health Care (0.5) AND	
HCC130AF	Decision Making in the Health Care Setting (0.5)	3
HCC146	Common Medical Terminology for Health Care Workers	2

Required Courses   40-42 Credits

BIO162	Microbiology Concepts for Allied Health (2) OR	
BIO205+	Microbiology (4)	2-4
PHY101+	Introduction to Physics	4
SGT103AA+	Surgical Asepsis	1
SGT103AB+	Sterilization and Disinfection	1
SGT104AA	Basic Surgical Instrumentation	1
SGT104AB	Specialty Surgical Instrumentation	1
SGT105	Surgical Technology Pre-Clinical	1
SGT110+	Basic Surgical Procedures	5
SGT115+	Operating Room Orientation	1
SGT120+	Operating Room Practicum I	2
SGT150+	Medical Terminology for Surgical Technology	1
SGT208+	Surgical Patient Care Concepts	1
SGT210+	Advanced Surgical Procedures	5
SGT217+	Pharmacology for Surgical Technology	2
SGT220+	Operating Room Practicum II	3
SGT225+	Operating Room Practicum III	3
SGT227+	Operating Room Practicum IV	3
SGT275+	Certification Examinations Preparation	3

General Education Requirements   17-23 Credits

COM110	Interpersonal Communication	3
CRE101+	Critical and Evaluative Reading (3) OR	
CRE111	Critical Reading for Business and Industry (3)	0-3
ENG101+	First Year Composition (3) AND	
ENG102+	First Year Composition (3) OR	
ENG107+	First Year Composition for ESL (3) AND	
ENG108+	First Year Composition for ESL (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent OR satisfactory completion of a higher level mathematics course	3-5
SOC101	Introduction to Sociology (3) OR	
PSY101	Introduction to Psychology (3)	3
Any approved General Education course in the Humanities and Fine Arts area		2-3

WATER RESOURCES TECHNOLOGIES
Certificates of Completion
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Water Resources Technologies: Hydrologic Studies (33-34 Credits)

The Certificate of Completion (CCL) in Water Resources Technologies: Hydrologic Studies program contains theoretical and practical hands-on training in the monitoring of water quality and quantity. The program includes operation, calibration and maintenance of water monitoring instruments. The program will prepare students with other science degrees interested in the Level I certification for the American Institute of Hydrology.

Program Prerequisites   0-5 Credits

MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR Equivalent OR	
	Satisfactory score on District placement exam	0-5

Required Courses   33-34 Credits
Students must select three (3) credits from the following courses:

CIS114AE	Excel: Level I (1) OR	
CIS117AM	Database Management: Microsoft Access - Level I (1) OR	
CIS118AB	PowerPoint: Level I (1) OR	
BPC/OAS130DK	Beginning Word (1) OR	
CIS133AA	Internet/Web Development Level I-A (1)	3
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Lab (1)	4
MAT103AA+	Math for Industrial Applications I	2
MAT103AB+	Math for Industrial Applications II	2
FAC/GTC/MI T/OSH106	Industrial Safety	2
WRT100+	Introduction to Water Resources (3) OR	
WRT101+	Introduction to Water Resources Field Experiences (4)	3-4
WRT120+	Hydrologic Instrumentation	4
WRT130+	Ground Water Hydrology	3
WRT130LL+	Ground Water Field Techniques	1
WRT150+	Introduction to Surface Water Data Collection	3
WRT151+	Introduction to Surface Water Data Collection Field Techniques	2
WRT240+	Water Quality	3
WRT240LL+	Water Quality Field Techniques	1

Associate of Applied Science Degree in Water Resources Technologies (67-70 Credits)

The Associate in Applied Science (AAS) in Water Resources Technologies degree includes theoretical and practical hands-on training in the monitoring of water quality and quantity as well as in water and industrial wastewater treatment. The emphasis is on federal, state, county, and city regulations affecting water quality and quantity management in addition to water/wastewater treatment. The students would be involved in the operation, calibration, and maintenance of water monitoring instruments and water and wastewater treatment equipment.

Program Prerequisites   0-5 Credits

MAT090+	Developmental Algebra (5) OR	
MAT091+	Introductory Algebra (4) OR	
MAT092+	Introductory Algebra (3) OR	
MAT093+	Introductory Algebra/Math Anxiety Reduction (5) OR	
	Equivalent OR	
	Satisfactory score on District placement exam	0-5

Required Courses   16-17 Credits

Students must select three (3) credits from the following courses:

CIS114AE	Excel: Level I (1) OR	
CIS117AM	Database Management: Microsoft Access - Level I (1) OR	
CIS118AB	PowerPoint: Level I (1) OR	
BPC/OAS130DK	Beginning Word (1) OR	
CIS133AA	Internet/Web Development Level I-A (1)	3
CHM130+	Fundamental Chemistry (3) AND	
CHM130LL+	Fundamental Chemistry Lab (1)	4
MAT103AA+	Math for Industrial Applications I	2
MAT103AB+	Math for Industrial Applications II	2
FAC/GTC/MIT/OSH106	Industrial Safety	2
WRT100+	Introduction to Water Resources (3) OR	
WRT101+	Introduction to Water Resources Field Experiences (4)	3-4

Students must select one of three (3) tracks:

Track I: Hydrologic Studies   **37.5 Credits**

WRT120+	Hydrologic Instrumentation	4
WRT130+	Ground Water Hydrology	3
WRT130LL+	Ground Water Field Techniques	1
WRT150+	Introduction to Surface Water Data Collection	3
WRT151+	Introduction to Surface Water Data Collection Field Techniques	2
WRT240+	Water Quality	3
WRT240LL+	Water Quality Field Techniques	1
WRT112 S	Surface-Water Records Computation	1.5
WRT117+	Geographic Information Systems (GIS)	3
WRT125+	Surveying for Water Resources	4
WRT250+	Surface Water Hydrology	3
WRT251+	Surface Water Field Techniques	2
WRT260+	Applied Hydrology: Groundwater, Surface Water, and Water Quality	4

A total of 3 credits must be taken from any of the following internship courses:

WRT270AA+	Water Resources Internship (1)	
WRT270AB+	Water Resources Internship (2)	
WRT270AC+	Water Resources Internship (3)	3

Track II: Water Treatment   29 Credits

WRT106	Small Water System Operation and Maintenance	3
WRT110	Principles of Water Treatment Plant Operations	3
WRT114	Mineral Control	3
WRT115+	Water Technology Calculations	3
WRT116+	Water Treatment Plant Administration	3
WRT134	Water Distribution System Operation and Maintenance	3
WRT140	Water Quality for Treatment Industry	3
WRT190AA	Water Technologies Seminar Level	1
WRT203+	Chemical and Biochemical Processes in Water/ Wastewater Treatment	3
WRT205+	Power and Instrumentation	3
WRT206+	Analytical Laboratory	1

Track III: Wastewater Treatment   29 Credits

WRT103+	Industrial Pretreatment	3
WRT115+	Water Technology Calculations	3
WRT121	Operation of Wastewater Treatment Plants	3
WRT124	Sludge and Solids Handling	3
WRT126+	Wastewater Plant Administration	3
WRT131	Wastewater Collection Systems Operation and Maintenance	3
WRT140	Water Quality for Treatment Industry	3
WRT190AA	Water Technologies Seminar Level	1
WRT203+	Chemical and Biochemical Processes in Water/ Wastewater Treatment	3
WRT205+	Power and Instrumentation	3
WRT206+	Analytical Laboratory	1

Restricted Electives   0-6 Credits

Track I: Hydrologic Studies – No Restricted Elective Required (0)

Track II: Water Treatment and Track III: Wastewater Treatment (6)
Students should select six (6) credits from the following courses in consultation with a program advisor:

WRT117+	Geographic Information Systems (GIS)	3
WRT204+	Water/Wastewater Maintenance/Mechanical Systems	3
WRT210+	Membrane Technologies	3
WRT218+	Troubleshooting Membrane Technologies	1
WRT230+	Ion Exchange Technologies	3
WRT238+	Troubleshooting Ion Exchange Technologies	4
WRT270AA+	Water Resources Internship	1
WRT270AB+	Water Resources Internship	2
WRT270AC+	Water Resources Internship	3
WRT280AA	Arizona Water Certification Review: Treatment Grades 1 & 2	0.5
WRT280AB	Arizona Water Certification Review: Treatment Grades 3 & 4	0.5
WRT280AC	Arizona Water Certification Review: Distribution Grades 1 & 2	0.5
WRT280AD	Arizona Water Certification Review: Distribution Grades 3 & 4	0.5
WRT281AA	Arizona Wastewater Certification Review: Wastewater Treatment Grades 1 & 2	0.5
WRT281AB	Arizona Wastewater Certification Review: Wastewater Treatment Grades 3 & 4	0.5
WRT281AC	Arizona Wastewater Certification Review: Collections Grades 1 & 2	0.5

WRT281AD   Arizona Wastewater Certification Review:
                    Collections Grades 3 & 4   0.5
OR any WRT course selected in consultation with a program advisor.

General Education Requirements	15-18 Credits

ENG101+   First-Year Composition (3) AND
ENG102+   First-Year Composition (3) OR
ENG111+   Technical and Professional Writing (3)   6
COM100   Introduction to Human Communication (3) OR
COM110   Interpersonal Communication (3) OR
COM230+   Small Group Communication (3)   3
CRE101+   College Critical Reading (3) OR
CRE111+   Critical Reading for Business and Industry (3) OR
                    Equivalent by Assessment on District
                    Placement exam   0-3
Any general education course in the Humanities and Fine
        Arts area   3
Any general education course in the Social and Behavioral
        Sciences area   3

WATER/WASTEWATER TREATMENT
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Industrial Technology
Chair: John Kelly

Certificate of Completion in Water Treatment (30-31 Credits)
The Certificate of Completion (CCL) in Water Treatment is designed to provide students with knowledge and skills to meet the challenges of working in the Water Treatment and Distribution field. Courses will prepare students by developing skills in the operation and maintenance of a water treatment plant and a water distribution system. This program will also examine effective preparation, analysis and interpretation of water samples, along with the public control components of the water cycle.

Required Courses	30-31 Credits

Students must select three (3) credits from the following courses:
CIS114AE   Excel: Level I (1) OR
CIS117AM   Database Management: Microsoft
                    Access - Level I (1) OR
CIS118AB   PowerPoint: Level I (1) OR
BPC/OAS130DK   Beginning Word (1) OR
CIS133AA   Internet/Web Development Level I-A (1)   3
CHM130+   Fundamental Chemistry (3) AND
CHM130LL+   Fundamental Chemistry Lab (1)   4
MAT103AA+   Math for Industrial Applications I   2
MAT103AB+   Math for Industrial Applications II   2
FAC/GTC/MIT/OSH106   Industrial Safety   2
WRT100+   Introduction to Water Resources (3) OR
WRT101+   Introduction to Water Resources Field
                    Experiences (4)   3-4
WRT110   Principles of Water Treatment Plant Operations   3
WRT115+   Water Technology Calculations   3
WRT134   Water Distribution System Operation and
                    Maintenance   3

WRT140   Water Quality for Treatment Industry   3
WRT190AA   Water Technologies Seminar Level   1
WRT206+   Analytical Laboratory   1

Certificate of Completion in Wastewater Treatment (30-31 Credits)
The Certificate of Completion (CCL) in Wastewater Treatment is designed to provide students with knowledge and skills to meet the challenges of working in a Wastewater Treatment Plant and a Wastewater Collection System. Courses will prepare students by developing skills in the operation and maintenance of wastewater treatment plants and wastewater collection systems. This program will also present procedures for effective preparation, analysis and interpretation of wastewater samples, and the treatment of wastewater for disease control.

Required Courses	30-31 Credits

Students must select three (3) credits from the following courses:
CIS114AE   Excel: Level I (1) OR
CIS117AM   Database Management: Microsoft
                    Access - Level I (1) OR
CIS118AB   PowerPoint: Level I (1) OR
BPC/OAS130DK   Beginning Word (1) OR
CIS133AA   Internet/Web Development Level I-A (1)   3
CHM130+   Fundamental Chemistry (3) AND
CHM130LL+   Fundamental Chemistry Lab (1)   4
MAT103AA+   Math for Industrial Applications I   2
MAT103AB+   Math for Industrial Applications II   2
FAC/GTC/MIT/OSH106   Industrial Safety   2
WRT100+   Introduction to Water Resources (3) OR
WRT101+   Introduction to Water Resources Field
                    Experiences (4)   3-4
WRT115+   Water Technology Calculations   3
WRT121   Operation of Wastewater Treatment Plant   3
WRT131   Wastewater Collection Systems Operation and
                    Maintenance   3
WRT140   Water Quality for Treatment Industry   3
WRT190AA   Water Technologies Seminar Level   1
WRT206+   Analytical Laboratory   1

WEB DEVELOPER

Certificate of Completion

To qualify, students must earn a grade of "C" or better in all courses within the program.

Division: Business and Information Technologies
Chair: Patricia Edgar

Certificate of Completion in Web Developer (30 Credits)

The Certificate of Completion (CCL) in Web Developer prepares a software developer to properly create and maintain web applications. In addition to web page development, this certificate prepares software developers to fully manage and develop corporate web systems using interactive applications. Developers will be able to write programs to manage corporate database via the web.

Required Courses		30 Credits
CIS105	Survey Computer Information Systems	3
CIS117DM	Microsoft Access: Database Management	3
CIS120DC	Flash: Digital Animation	3
CIS120DF	Computer Graphics: Adobe Photoshop (3) OR	
CIS120AF	Computer Graphics: Adobe Photoshop: Level I (1) AND	
CIS120BF	Computer Graphics: Adobe Photoshop Level II (1) AND	
CIS120CF	Computer Graphics: Adobe Photoshop: Level III (1)	3
CIS126AA	UNIX Operating System: Level 1	1
CIS133DA	Internet/Web Development Level I	3
CIS166++	Any Module	3
CIS233DA+	Internet/Web Development Level II	3
CIS234+	XML Application Development	3
CIS235+	e-Commerce	3
CIS298AB+	Special Projects (2) OR	
CIS290AB+	Computer Information Systems Internship (2) OR	
CIS296WB+	Cooperative Education (2)	2

CONSTRUCTION TRADES: BRICKLAYING

Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Bricklaying and Tilesetting Joint Apprenticeship and Training Committee
2601 East Monroe Street
Phoenix, Arizona 85034
602.286.9030

Associate in Applied Science in Construction Trades: Bricklaying (60-65.5 Credits)
The Associate in Applied Science (AAS) in Construction Trades: Bricklaying program is designed to provide journeyman bricklayers with general education in the areas of communication, humanities, and social and behavioral sciences that develop leadership skills needed in the construction field. Graduates are qualified to move into supervisory, foreman, superintendent, and ownership positions within the Bricklaying trade.

Required Courses		33-33.5 Credits
Certificate of Completion in Construction Trades: Bricklaying		30-30.5
BPC/CIS+++++	Any BPC Business-Personal Computers OR CIS Computer Information Systems course(s)	3

Restricted Electives		5 Credits

Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BKL+++++	Any BLK Bricklaying course(s)	
BLT+++++	Any BLT Building Safety and Construction technology course(s)	
BPC+++++	Any BPC Business Personal Computers course(s)	
CAD+++++	Any CAD Computer Aided Drafting course(s)	
CNS+++++	Any CNS Construction course(s)	
GBS+++++	Any GBS General Business course(s)	
IND+++++	Any IND Industry course(s)	
MGT+++++	Any MGT Management course(s)	
OSH+++++	Any OSH Occupational Safety and Health course(s)	
SPA+++++	Any SPA Spanish course(s)	
TDR+++++	Any TDR Trade related course(s)	
WLD+++++	Any WLD Welding Technology course(s)	

General Education Requirements		22-27 Credits
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by Assessment	0-3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR Equivalent course OR Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: BRICKLAYING AND TILESETTING

Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Bricklaying and Tilesetting Joint Apprenticeship and Training Committee
2601 East Monroe Street
Phoenix, Arizona 85034
602.286.9030

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Bricklaying (30-30.5 Credits)
The Certificate of Completion (CCL) in Construction Trades: Bricklaying and Tilesetting program is designed to provide apprentice bricklayers with trade-related classroom training as required by the U.S. Department of Labor, Bureau of Apprenticeship Training, and the State of Arizona, Apprenticeship Division. This program consists of courses in trade calculations, safety, tools, bricklaying and masonry techniques; residential, light construction, and heavy commercial blueprint reading; estimating and formal bidding. Completion of this certificate documents the student has successfully completed to Journeyman status in the Bricklaying Trade.

Required Courses		30-30.5 Credits
BKL105+	Basic Masonry Skills and Trade Calculations I	5
BKL115+	Basic Masonry Skills and Trade Calculations II	5
BKL205+	Advanced Brick and Block Construction	5
BKL215+	Blueprint Reading: Residential and Light Construction	5
BKL225+	Blueprint Reading: Heavy Commercial	5
BKL235+	Masonry Estimating and Formal Bidding	5
CNS110+	Green Construction Overview	0.5

CONSTRUCTION TRADES: CARPENTRY

Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Southwest Carpenters Training Fund
4547 W. McDowell
Phoenix, AZ 85035
602.272.6547

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Carpentry (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Carpentry program is designed to provide knowledge and skills in the carpentry trade. These include concrete formwork, framing, exterior finish, interior finish and interior system. Students complete a minimum number of self-selected modules in each area to complement their work site activities.

Required Courses   30 Credits
Students should select thirty (30) credits from the following courses:

CRP102AA+	Concrete Formwork: Building Layout	1
CRP102AB+	Concrete Formwork: Residential Footing Form	1
CRP102AC+	Concrete Formwork: Footing Forms and Bolt Layout	1
CRP102AD+	Concrete Formwork: Basic Wall Forms	1
CRP102AG+	Concrete Formwork: Spandrel Beam	1
CRP102AH+	Concrete Formwork: Deck Forms and Shoring	1
CRP102AI+	Concrete Formwork: Concrete Stair Forms	1
CRP102AJ+	Concrete Formwork: Tilt-up Construction I	1
CRP102AM+	Concrete Formwork: Flatwork	1
CRP102AN+	Concrete Formwork: Culverts, Headwall and Wing Walls	1
CRP102AP+	Concrete Formwork: Gang Forms	1
CRP103AA+	Framing: Basic Wall Framing	1
CRP103AD+	Framing: Basic Floor Joist	1
CRP103AE+	Framing: Gable Roof	1
CRP103AF+	Framing: Hip Roof	1
CRP103AG+	Framing: Intersecting Roof	1
CRP103AI+	Framing: Wood Stairs	1
CRP103AJ+	Framing: Framing Square	1
CRP103AL+	Framing: Advanced Framing Square Application	1
CRP104AE+	Exterior Finish: Roof Coverings	1
CRP105AA+	Interior Finish: Standard Door Installation	1
CRP105AC+	Interior Finish: Running Trim	1
CRP105AG+	Interior Finish: Door Hardware	1
CRP105AI+	Interior Finish: Metal Partitions	1
CRP105AJ+	Interior Finish: Soffit Panel	1
CRP106AA+	Interior Systems: Metal Frame Walls	1
CRP106AB+	Interior Systems: Dry Wall Applications	1
CRP106AH+	Interior Systems: Dry Wall Estimation of Material	1
CRP106AK+	Interior Systems: Suspended Lay-In Ceilings	1
CRP110AA+	Introduction to Carpentry I: History and Tools	2
CRP110AB+	Introduction to Carpentry II: OSHA Safety	2
CRP112AA+	Technical Calculations for Carpenters I	2
CRP112AB+	Technical Calculations for Carpenters II	2
CRP112AC+	Advanced Calculations for Carpenters	2
CRP114AA+	Blueprint Reading for Carpenters I	2
CRP114AB+	Blueprint Reading for Carpenters II	2
CRP116AA+	Concrete Formwork I	2
CRP116AB+	Concrete Formwork II	2
CRP210AA+	Basic Framing I	2
CRP210AB+	Basic Framing II	2
CRP210AC+	Commercial Framing I: Panelized Roof	2
CRP212AA+	Scaffolding for Carpenters	2
CRP212AB+	Level, Transit and Layout	2
CRP212AC+	Rigging	2
CRP214AA+	Interior Systems: Drywall	2
CRP214AB+	Interior Systems: Ceilings and Clean Rooms	2
CRP214AC+	Interior Finish: Door Installation and Hardware	2
CRP214AD+	Cabinets and Tops	2
FAC/GTC/MIT/OSH106+	Industrial Safety	2
WLD100+	Basic Welding	2
WLD101	Welding I	3
WLD102	Welding II	3

Associate in Applied Science in Construction Trades: Carpentry (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Carpentry degree is designed to provide a well-rounded education to the journeyman carpenter/student that will enable that student to advance in the construction industry.

Required Courses   33 Credits

Certificate of Completion in Construction Trades: Carpentry		30
BPC/CIS+++++	Any BPC/CIS course(s)	3

Restricted Electives   5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT course(s)
BPC+++++	Any BPC course(s)
CAD+++++	Any CAD course(s)
CNS+++++	Any CNS course(s)
CRP+++++	Any CRP course(s)
GBS+++++	Any GBS course(s)
IND+++++	Any IND course(s)
MGT+++++	Any MGT course(s)
OSH+++++	Any OSH course(s)
SPA+++++	Any SPA course(s)
TDR+++++	Any TDR course(s)
WLD+++++	Any WLD course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communications (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	0-3

ENG101+	First-Year Composition	3
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	3
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent by Assessment	3-5
Any general education course in the Social and Behavioral Science area		3
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: CONCRETE FORM BUILDER
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Registered apprentice status in the State of Arizona with a trade-specific sponsoring organization.

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Concrete Form Builder (27.5 Credits)
The Certificate of Completion (CCL) in Construction Trades: Concrete Form Builder is design to provide knowledge and skills in the Carpentry trade. Students receive education in safety, trade math, basic principles of rigging, concrete, site plan reading, and site layout. In addition, students will gain competence in form work, framing, flatwork, and stair construction. Upon the completion of this apprenticeship program, students are considered journey men in the Concrete Form Builder trade.

Required Courses		27.5 Credits
ABA120	Carpentry Fundamentals	1
ABA135	Cast-in-Place Stairs	1
ABA/IND136	Communications in Construction	1
ABA207	Construction Trades: Green Environment	1
ABA222	Introduction to Welding, Brazing and Cutting	2
ABC/MEC121	Introduction to Hand and Power Tools	1
ABC/HEO/MEC122	Rigging Safety and Equipment	1
ABC135	Fundamentals of Concrete	1
OSH105	Construction Safety	2
SUN101	Basic Math for Carpenters	2
SUN104	Site Preparation	1
SUN105	Reading Plans and Elevations	2
SUN108	Wall Systems, Tilt-up	1.5
SUN109	Site Preparation II	2
SUN110	Forming	1.5
SUN110AA	Forming (Loose) Fundamentals	1
SUN111	Introduction to Light Equipment	1
SUN112	Framing Fundamentals	1
SUN201	Reinforcing Concrete	1.5
SUN202	Horizontal and Vertical Formwork	2

CONSTRUCTION TRADES: CONSTRUCTION MANAGEMENT
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Program Accreditation/Certification or Licensure Information: This program provides completers with the necessary competencies to obtain training certification through the National Association General Contractors of America (AGC) office.

Certificate of Completion in Construction Trades: Construction Management (26 Credits)
The Certificate of Completion (CCL) in Construction Trades: Construction Management program is designed to train and upgrade skills of people working in the construction industry as foremen, supervisors, construction business owners, and construction superintendents. Training is included in the areas of leadership and motivation, oral and written communications, problem solving, contracts and documents, planning and scheduling, cost awareness and production control, sustainability, project safety and improvement. The skills acquired in this program can be applied to work in highway departments, engineering and architectural firms, and material sales firms, as well as the construction industry.

Required Courses		20 Credits
ABC120	Basic Calculations for Construction	1.5
BPC110	Computer Usage and Application	3
GBS110	Human Relations in Business and Industry	3
IND135	Interpersonal Skills and Leadership in Construction	1
IND137	Issues and Resolutions	1
IND138	Introduction to Project Management and Resource Control	1
IND139	Construction Documents	1
IND140	Construction Scheduling and Time Management	1
IND141	Estimating and Cost Control	1
IND145	Sustainable Construction Supervisor	1.5
OSH101	Introduction to Environmental Hazardous Material Technology	3
OSH105	Construction Safety	2

Restricted Electives		6 Credits

Students should select any combination of courses for a total of 6 credits from the following prefixes.

COM110	Interpersonal Communication	3
COM230+	Small Group Communication	3
MAT102+	Mathematical Concepts/Applications (3) OR Equivalent OR Satisfactory completion of a higher level mathematics course	3
MGT+++++	Any MGT Management course(s)	3
OSH102	Introduction to Industrial Hygiene	3
OSH106	Industrial Safety	2
OSH107	Occupational Safety Principles and Practice	3
OSH110	OSH Standards for Construction (OSX910)	2
OSH111	OSH Standards for General Industry (OSX911)	2

CONSTRUCTION TRADES: ELECTRICITY

Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Formal application and admission to the program by the following registered apprenticeship programs:
Phoenix Electrical Joint Apprenticeship Training Committee
615 East Palo Verde
Phoenix, AZ 85012
602.263.8104
OR
Independent Electrical Contractors Association
4029 North 31st Avenue
Phoenix, Arizona 85017
602.200.8883
OR
Arizona Builders' Alliance
2702 North 3rd Street, #2020
Phoenix, Arizona 85004-4606
602.274.8222

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Electricity (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Electricity program is designed to provide knowledge and skills in the electrical building trade. These include use of tools, installation of circuitry, equipment, and special service systems, reading blueprints, and a basic understanding of electronics and electronic devices. Students are admitted to the Certificate of Completion (CCL) in Construction Trades: Electricity program only through the Phoenix Electrical Joint Apprenticeship Training Committee, the Independent Electrical Contractors Association, or the Arizona Builders' Alliance selection process.

Required Courses		30 Credits
Students should select thirty (30) credits from the following courses:		
ABA101+	Hand and Power Tools	1
ABA102	Electrical Fundamentals	1
ABA103	Hand Bending of Electrical Conduit	0.5
ABA104+	Raceways, Boxes, Fittings Anchors/Supports	1.5
ABA130+	Installation of Electrical Services	1
ABA150+	Advanced Calculations for Electricians	1.5
ABA201+	Overcurrent Protection	1
ABA202+	Conductor Selection and Calculations	1
ABA203+	Load Calculations-Branch Circuits	1
ABA204	Contractors and Relays	1
ABA251+	High Voltage Terminations and Splicing	1
ABA252+	Load Calculations Feeder and Services	1
ABA253+	Motor Maintenance-Part 2	1
ABA254+	Advanced Motors Controls	1.5
ABA255+	Commercial, Industrial and Specialty Lighting	0.5

ABA256+	Fire Alarm Systems	1
ABA257+	Specialty Transformers and Emergency Systems	2
ABA258+	Special Locations	1
ABC118+	OSHA Standards and Regulations	1.5
ABC/MEC120+	Basic Calculations for Construction	1.5
ABC/MEC121+	Introduction to Hand and Power Tools	1
ABC/MEC122+	Rigging Safety and Equipment	1
ABC123+	Introduction to Blueprints	0.5
ABC124+	Conduit Bending	1
ABC127+	Electrical Wiring and Blueprints	1.5
ABC129+	Electrical Boxes and Fittings	0.5
ABC130+	Conductor Installation/Termination	1
ABC131+	Cable Tray Installation	0.5
ABC132+	Circuit Breakers and Fuses	1
ABC142+	Alternating Current	1
ABC143+	Motors: Theory and Application	2
ABC144+	Grounding	1
ABC221+	Motors and Motor Controls	3
ABC222+	Hazardous Locations-Electrical	1
ABC223+	Electrical Distribution Systems	1.5
ABC226+	Raceways, Wiring Devices, Boxes and Fittings	1.5
ABC266+	Basic Electronic Theory	0.5
ABC269+	HVAC Controls and Heat Tracing	1
ABC276+	Lamps, Ballasts and Components	1
ELA111+	Construction Electricity I	4
ELA112+	Construction Electricity II	4
ELA123+	Construction Electricity III	4
ELA124+	Construction Electricity IV	4
ELA235+	Advanced Construction Electricity I	4
ELA236+	Advanced Construction Electricity II	4
ELA247+	Advanced Construction Electricity III	4
ELA248+	Advanced Construction Electricity IV	4
ELA252+	Advanced Construction Electricity V	4
ELA253+	Advanced Construction Electricity VI	4
IEC101	Basic Electricity	5
IEC102+	Electrical Residential	5
IEC103+	Electrical A/C and D/C	5
IEC104+	Wiring Motors and Transformers	5
IEC105+	Electric Blueprint Reading	5
IEC106+	Electric Motor Controls	5
IEC107+	Electronics and Controls	5
IEC108+	Alarm Systems and Codes	5

Associate in Applied Science in Construction Trades: Electricity (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Electricity program is designed to provide the student with general education knowledge including communication skills and liberal arts concepts in addition to trade skills. Students completing the associate degree will be better prepared to advance on the career ladder.

Required Courses		33 Credits
Certificate of Completion in Construction Trades:		
Electricity		30
BPC/CIS+++++	Any BPC/CIS course(s).	3

Restricted Electives		5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:		
ABA/ABC+++++	Any BLT Arizona Builders Alliance or Associated Builders and Contractors course(s)	

BLT+++++	Any BLT Building Safety and Construction technology course(s)
BPC+++++	Any BPC Business Personal Computers course(s)
CAD+++++	Any CAD Computer Aided Drafting course(s)
CNS+++++	Any CNS Construction course(s)
ELA+++++	Any ELA Electrician: Apprenticeship course(s)
GBS+++++	Any GBS General Business course(s)
IEC+++++	Any IEC Independent Electrical Contractors course(s)
IND+++++	Any IND Industry course(s)
MGT+++++	Any MGT Management course(s)
OSH+++++	Any OSH Occupational Safety and Health course(s)
SPA+++++	Any SPA Spanish course(s)
TDR+++++	Any TDR Trade related course(s)
WLD+++++	Any WLD Welding Technology course(s)

General Education Requirements   25-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120	Intermediate Algebra (5) OR	
MAT121	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent by Assessment	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: HEAT AND FROST INSULATION

Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Heat, Frost, and Asbestos Insulators Joint Apprenticeship and Training Committee (HFA JATC)
1841 North 24th Street, Suite 7
Phoenix, AZ 85008
602.225.0119

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Heat and Frost Insulation   (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Heat and Frost Insulation program is designed to provide apprentice insulators with trade related classroom training as required by the U.S. Department of Labor, Bureau of Apprenticeship Training, and the State of Arizona, Apprenticeship Division. It is a program consisting of courses in trade calculations, safety, piping insulation skills, fabrication, shop layout, and pattern making, supervision, blueprints and firestopping.

Required Courses   30 Credits
Students should select thirty (30) credits from the following courses:

HFA101+	Introduction to Insulation	5
HFA110+	Math for Heat and Frost Technology	5
HFA115+	Fundamental Insulation Skills: Piping I	5
HFA150+	Shop Fabrication: Layout and Pattern-making for Insulators I	5
HFA204	Use and Care of Tools and Scaffolding	2
HFA215+	Fundamental Insulation Skills: Piping II	5
HFA250+	Shop Fabrication: Layout and Pattern-making for Insulators II	5
HFA260+	Blueprints and Firestopping	5
HFA270+	Supervision for Foreman	5

Associate in Applied Science in Construction Trades: Heat and Frost Insulation   (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Heat and Frost Insulation degree is designed to provide journeyman insulators with general education in the areas of communication, humanities, and social and behavioral sciences that will develop leadership skills needed in the construction field. Graduates are qualified to move into supervisory, foreman, superintendent, and ownership positions within the insulation trade.

Required Courses   33 Credits

| Certificate of Completion in Construction Trades: Heat and Frost Insulation | 30 |
| BPC/CIS++++ Any BPC/CIS course(s) | 3 |

Restricted Electives   5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT Building Safety and Construction course(s)
BPC+++++	Any BPC Business Personal Computers course(s)
CAD+++++	Any CAD Computer Aided Drafting course(s)
CNS+++++	Any CNS Construction course(s)
GBS+++++	Any GBS General Business course(s)
HFA+++++	Any HFA Heat and Frost Technology course(s)
IND+++++	Any IND Industry course(s)
MGT+++++	Any MGT Management course(s)
OSH+++++	Any OSH Occupational Safety and Health course(s)
SPA+++++	Any SPA Spanish course(s)
TDR+++++	Any TDR Trade related course(s)
WLD+++++	Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6

MAT120+ Intermediate Algebra (5) OR
MAT121+ Intermediate Algebra (4) OR
MAT122+ Intermediate Algebra (3) OR
Equivalent course OR
Satisfactory completion of a higher level
mathematics course 3-5
Any general education course in the Humanities and Fine
Arts area 3
Any general education course in the Social and Behavioral
Sciences area 3
Any general education course in the Natural Sciences area 4

CONSTRUCTION TRADES: HEAVY EQUIPMENT OPERATIONS

Certificate of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Formal application and admission to the program is required through:
Maricopa County Department of Transportation (MCDOT)
2901 W. Durango Street
Phoenix, AZ 85009
602.506.4835

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Heavy Equipment Operations (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Heavy Equipment Operations program is designed to train heavy equipment operators in safety related to heavy equipment operations, basic calculations, rigging, maintenance, and troubleshooting. Specific vehicles that will be used in training will include but not be limited to: tractors, scrapers, aerial lift trucks, backhoes, graders, forklifts, bull dozers, all terrain vehicles, excavators, and cranes. Training will include earth moving, grading, soil analysis, and soil compaction. This classroom training is supplemented with required on-the-job-training that leads the student to obtain certification from Maricopa County Department of Transportation (MCDOT).

Required Courses		30 Credits

Students should select thirty (30) credits from the following courses:

ABC118+OSHA	Standards and Regulations	1.5
ABC/MET119+	Basic Safety	1
ABC/MET120+	Basic Calculations for Construction	1.5
ABC/MET121+	Introduction to Hand and Power Tools	1
ABC/HEO/MEC122+	Rigging Safety and Equipment	1
ABC123+	Introduction to Blueprints	1
HEO101+	Introduction to Heavy Equipment Operations	1
HEO104+	Heavy Equipment Maintenance	1
HEO106+	Tractors	1
HEO107+	Heavy Equipment Operations: Soils I	1
HEO109+	Heavy Equipment Operations: Soils II	1

HEO115+	Aerial Lift Truck Operation and Safety	1
HEO/PPT117	Forklift Operations	1
HEO124+	Scrappers	2
HEO125+	Heavy Equipment Operations: Rollers	1
HEO134+	Backhoe Operations	1
HEO135+	Grades I	1
HEO137+	Grades II	1
HEO139+	All Terrain Vehicle Operation and Safety	1
HEO/IND142	Construction Safety/Loss Prevention	1
HEO201+	Introduction to Earth Moving	1
HEO204+	Bulldozers	1
HEO206+	Front-end Loaders	2
HEO207+	Heavy Equipment Operations: Soils III	1
HEO212+	Heavy Equipment Operations: Finish Operator	1
HEO214+	Heavy Equipment Operations: Excavators	1
HEO216+	Motor Graders	2
HEO222+	Heavy Equipment Operations: Finishing and Grading	1
OSH105	Construction Safety	2
TDR102+	Construction Soft Skills I: Workplace Skills	1
TDR104+	Construction Soft Skills II: Listening and Speaking	1
TDR106+	Construction Soft Skills III: Resolving Workplace Issues	1
TTD101+	Truck Trailer Driving I	3
TTD102+	Truck Trailer Driving II	3
TTD103+	Truck Trailer Driving III	4
WLD100+	Basic Welding	2

Associate in Applied Science in Construction Trades: Heavy Equipment Operations (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Heavy Equipment Operations program is designed to train heavy equipment operators in safety related to heavy equipment operations, basic calculations, rigging, maintenance, and troubleshooting. Specific vehicles that will be used in training will include but not be limited to: tractors, scrapers, aerial lift trucks, backhoes, graders, forklifts, bull dozers, all terrain vehicles, excavators, and cranes. Training will include earth moving, grading, soil analysis, and soil compaction. This classroom training is supplemented with required on-the-job-training that leads the student to obtain certification from Maricopa County. In addition, the degree allows the student to expand their academic experience in the general education arena and to advance within the Maricopa County system to management and supervisory positions.

Required Courses		33 Credits
Certificate of Completion in Construction Trades: Heavy Equipment Operations		30
BPC/CIS++++	Any BPC/CIS course(s)	3

Restricted Electives		5 Credits

Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT Building Safety and Construction technology course(s)	
BPC+++++	Any BPC Business Personal Computers course(s)	
CAD+++++	Any CAD Computer Aided Drafting course(s)	
CNS+++++	Any CNS Construction course(s)	
GBS+++++	Any GBS General Business course(s)	
HEO+++++	Any HEO Heavy Equipment Operations course(s)	
IND+++++	Any IND Industry course(s)	

MGT+++++   Any MGT Management course(s)
OSH+++++   Any OSH Occupational Safety and Health course(s)
SPA+++++   Any SPA Spanish course(s)
TDR+++++   Any TDR Trade related course(s)
WLD+++++   Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent assessment on District Placement	
	exam (0)	0-3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG107+	First-Year Composition for ESL (3) AND	
ENG108+	First-Year Composition for ESL (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level	
	mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: IRONWORKING

Certificate of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Arizona Field Ironworkers Apprenticeship and Training Program
950 East Elwood
Phoenix, AZ 85040
602.276.6055

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Ironworking (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Ironworking program is designed to provide comprehensive coursework for Ironworking Apprentices to prepare them for employment in the construction industry. Training will cover all facets of iron.

Required Courses   30 Credits
Students should select thirty (30) credits from the following courses:

CNS110+	Green Construction Overview	0.5
IRW101+	Ironworking I: Trade Science	3
IRW102+	Ironworking II: Basics	3
IRW/PFT103+	Science, Rigging, and Hoisting	6
IRW105	Ironworking III: History	3
IRW120+	Structural Steel Erection I	3
IRW121+	Structural Steel Erection II	3
IRW130+	Reinforcing I: Rebar	3
IRW131+	Reinforcing II: Post Tension	3
IRW150+	Rigging I	3
IRW151+	Rigging II	3
IRW160+	Architectural Ironworking I	3
IRW161+	Architectural Ironworking II	3
IRW180+	Light Industrial: Precast/Metal Buildings	3
FAC/GTC/MIT/OSH106	Industrial Safety	2
WLD101	Welding I	3
WLD201+	Welding II	3
TDR/WLD202+	Construction Welding III	3

Associate in Applied Science in Construction Trades: Ironworking (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Ironworking program is designed to provide journeyman ironworker with general education in the areas of communication, humanities, and social and behavioral sciences that develop leadership skills needed in the construction field. Graduates are qualified to move into supervisory, foreman, superintendent, and ownership positions within the Ironworking trade.

Required Courses   33 Credits

Certificate of Completion in Construction Trades: Ironworking		30
BPC/CIS+++++	Any BPC/CIS course(s)	3

Restricted Electives   5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT Building Safety and Construction course(s)
BPC+++++	Any BPC Business Personal Computers course(s)
CAD+++++	Any CAD Computer Aided Drafting course(s)
CNS+++++	Any CNS Construction course(s)
GBS+++++	Any GBS General Business course(s)
IND+++++	Any IND Industry course(s)
IRW+++++	Any IRW Ironworking course(s)
MGT+++++	Any MGT Management course(s)
OSH+++++	Any OSH Occupational Safety and Health course(s)
SPA+++++	Any SPA Spanish course(s)
TDR+++++	Any TDR Trade related course(s)
WLD+++++	Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment on District Placement	
	Exam	0-3

ENG101+   First-Year Composition (3) AND
ENG102+   First-Year Composition (3) OR
ENG107+   First-Year Composition for ESL (3) AND
ENG108+   First-Year Composition for ESL (3) OR
ENG111+   Technical and Professional Writing (3)   6
MAT120+   Intermediate Algebra (5) OR
MAT121+   Intermediate Algebra (4) OR
MAT122+   Intermediate Algebra (3) OR
            Equivalent course OR
            Satisfactory completion of a higher level
            mathematics course   3-5
Any general education course in the Humanities and Fine
    Arts area   3
Any general education course in the Social and Behavioral
    Sciences area   3
Any general education course in the Natural Sciences area   4

CONSTRUCTION TRADES - MECHANICAL TRADES: HEATING, VENTILATING, AND AIR CONDITIONING

Certificate of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship programs: Arizona Builders Alliance (ABA)
1825 West Adams
Phoenix, Arizona 85017
602.274.8222
OR
Tri City Mechanical
6875 West Galveston
Chandler, Arizona 85226
480.940.8400 Extension 150

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades - Mechanical Trades: HVAC (30 Credits)

The Certificate of Completion (CCL) in Construction Trades - Mechanical Trades: HVAC program is designed to provide knowledge and skills in the Heating, Ventilation and Air Conditioning (HVAC) trade. Course work includes basic principles of HVAC, trade calculations and science. Students will gain competence in piping, soldering and brazing procedures. Topics covered will include: air distribution, venting and sizing of materials, use of measurement instruments, equipment, and devices, compressors and pumps. Heating with gas-fired equipment and furnaces will be covered. Students will apply common techniques in testing, troubleshooting and maintenance practices. Additional related training will include basic electricity as it relates to the HVAC trade.

Required Courses   30 Credits
Students should select thirty (30) credits from the following courses:
MEC101+   HVAC I: Principles and Trade Calculations   5
MEC103+   HVAC II: Piping, Soldering, Brazing, and
            Electrical   5
MEC106+   HVAC III: Systems   5
MEC124+   HVAC IV: Equipment, Devices, Compressors
            and Pumps   5
MEC201+   HVAC V: Maintenance and Troubleshooting   5
MEC203+   HVAC VI: Troubleshooting Heating and
            Cooling Systems   5
MEC206+   HVAC VII: Air Quality and Energy Conservation   5
MEC224+   HVAC VIII: Water Treatment and HVAC Design   5

Associate in Applied Science in Construction Trades - Mechanical Trades: HVAC (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades - Mechanical Trades: HVAC program is designed to provide knowledge and skills in the Heating, Ventilation and Air Conditioning (HVAC) trade. Course work includes basic principles of HVAC, trade calculations and science. Students will gain competence in piping, soldering and brazing procedures. Topics covered will include: air distribution, venting and sizing of materials, use of measurement instruments, equipment, and devices, compressors and pumps. Heating with gas-fired equipment and furnaces will be covered. Students will apply common techniques in testing, troubleshooting and maintenance practices. Additional related training will include basic electricity as it relates to the HVAC trade.

Required Courses   33 Credits
Certificate of Completion in Construction Trades: Mechanical
    Trades: Heating, Ventilating and Air Conditioning   30
BPC/CIS   Any BPC/CIS course(s)   3

Restricted Electives   5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:
BLT+++++   Any BLT Building Safety and Construction course(s)
BPC+++++   Any BPC Business Personal Computers course(s)
CAD+++++   Any CAD Computer Aided Drafting course(s)
CNS+++++   Any CNS Construction course(s)
GBS+++++   Any GBS General Business course(s)
IND+++++   Any IND Industry course(s)
MEC+++++   Any MEC Mechanical Trades course(s)
MGT+++++   Any MGT Management course(s)
OSH+++++   Any OSH Occupational Safety and Health course(s)
SPA+++++   Any SPA Spanish course(s)
TDR+++++   Any TDR Trade related course(s)
WLD+++++   Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits
COM100   Introduction to Human Communication (3) OR
COM110   Interpersonal Communication (3) OR
COM230+   Small Group Communication (3)   3
CRE101+   College Critical Reading (3) OR
CRE111+   Critical Reading for Business and Industry (3) OR
            Equivalent by Assessment   0-3
ENG101+   First-Year Composition AND
ENG102+   First-Year Composition (3) OR
ENG111+   Technical and Professional Writing (3)   6

MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5

Any general education course in the Humanities and Fine Arts area   3

Any general education course in the Social and Behavioral Sciences area   3

Any general education course in the Natural Sciences area   4

CONSTRUCTION TRADES - MECHANICAL TRADES: PIPEFITTING

Certificate of Completion

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship programs:

The Arizona Builders Alliance
1825 West Adams
Phoenix, Arizona 85007
602.244.8222
OR
Metro Phoenix Plumbing, Heating and Cooling Contractors (PHCC)
7635 West Hope Drive
Peoria, Arizona 85345
623.486.3324
OR
Tri-City Mechanical
6875 West Galveston
Chandler, Arizona 85226
480.940.8400 Extension 150
OR
Interstate Mechanical Contractors, Inc.

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades - Mechanical Trades: Pipefitting (30 Credits)

The Certificate of Completion (CCL) in Construction Trades - Mechanical Trades: Pipefitting program is designed to provide knowledge and skills in the residential, commercial, industrial, and institutional pipefitting trade. Course work includes safety, material selection, basic and advanced pipefitting calculations and principles of science. Students will also be competent in sources and treatment of public, private, and individual gas, water, heating, waste, and specialized pipefitting systems, cross connection protection, pipe identification, and blueprint reading. Course work also includes rigging, basic and advanced fabrication, pipe cutting, valves and specialized piping systems, cross connection protection, pipe identification, blueprint reading and pipefitting code. Additional related training will include basic electricity and troubleshooting.

Required Courses		30 Credits
Students should select thirty (30) credits from the following courses:		
ABA101+	Hand and Power Tools	1
ABA/MEC111+	Drawings and Detail Sheets	0.5
ABA/MEC113+	Rigging for Pipefitters	1
ABA/MEC115+	Intermediate Excavations and Underground Pipe Install	1.5
ABA/MEC117+	Socket and Butt Weld Fabrication	4
ABC/MEC116+	Pipefitting Blueprints and Specifications	1
ABC117+	Pipe Cutting and Installation	2
ABC/MEC119+	Basic Safety	1
ABC/MEC120+	Basic Calculations for Construction	1.5
ABC/MEC121+	Introduction to Hand and Power Tools	1
ABC/MEC122+	Rigging Safety and Equipment	1
ABC123+	Introduction to Blueprints	0.5
ABC150+	Hand and Power Tools and Motorized Equipment	2
ABC/MEC210+	Steam Traps	0.5
ABC/MEC213+	Specialty Piping and Hot Taps	2
ABC/MEC251+	Advanced Trade Calculations-Pipefitter	1
ABC/MEC254+	Field Routing, Trim and Springs	2
ABC/MEC256+	Basic Plumbing	1
IMC137+	Trade Math II	1
IMC148+	Field Routing & Vessel Trim	1
MEC102+	Construction Pipe Trades I	5
MEC104+	Construction Pipe Trades II	5
MEC109+	Excavations	0.5
MEC112+	Piping Systems-Hangers and Supports	1
MEC124+	HVAC IV: Equipment, Devices, Compressors and Pumps	5
MEC132	Construction Pipe Trades III	5
MEC134	Construction Pipe Trades IV	5
MEC139+	Basic Piping Systems	0.5
MEC151+	Ladders and Scaffolds	0.5
MEC202	Advanced Construction Pipe Trades	5
MEC204	Advanced Construction Pipe Trades II	5
MEC211+	In-Line Specialties for Pipefitting	0.5
MEC212+	Maintaining Valves	1
MEC214+	Stress Relieving & Aligning Pipes	1
MEC232	Advanced Construction Pipe Trades III	5
MEC234	Advanced Construction Pipe Trades IV	5
MEC250+	Advanced Piping Blueprints/Drawings	0.5
MEC252+	Motorized Equipment/Testing-Piping	2
MEC253+	Aboveground Pipe Installation	1
MEC255+	Valve Installation	1.5
MEC257+	Advanced Pipe Fabrication	4
MEC258+	Work Planning and NDE Testing	1
OSH105+	Construction Safety	2

CONSTRUCTION TRADES - MECHANICAL TRADES: PLUMBING

Certificate of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Formal application and admission to the program is required by the following apprenticeship committee:

The Arizona Builders Alliance
1825 West Adams
Phoenix, Arizona 85007
602.244.8222
OR
Metro Phoenix Plumbing, Heating and Cooling Contractors (PHCC)
7635 West Hope Drive
Peoria, Arizona 85345
623.486.3324
OR
Tri-City Mechanical
6875 West Galveston
Chandler, Arizona 85226
480.940.8400 Extension 150

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Mechanical Trades: Plumbing (30 Credits)

The Certificate of Completion (CCL) in Construction Trades - Mechanical Trades: Plumbing program is designed to provide knowledge and skills in the residential, commercial, industrial, and institutional plumbing trade. Course work includes safety, material selection, installation of plumbing systems, basic and advanced plumbing calculations and principles of science. Students will also be competent in sources and treatment of public, private, and individual gas, water, heating, waste, and specialized piping systems, cross connection protection, blueprint reading and plumbing code. Additional related training will include basic electricity and troubleshooting related to the plumbing trade.

Required Courses		30 Credits
Students should select thirty (30) credits from the following courses:		
MEC105+	Residential and Industrial Plumbing I	5
MEC107+	Residential and Industrial Plumbing II	5
MEC108+	Residential and Industrial Plumbing III	5
MEC118+	Residential and Industrial Plumbing IV	5
MEC/ABC121+	Introduction to Hand and Power Tools	1
MEC205+	Residential and Industrial Plumbing V	5
MEC207+	Residential and Industrial Plumbing VI	5
MEC208+	Residential and Industrial Plumbing VII	5
MEC218+	Residential and Industrial Plumbing VIII	5
MEC258+	Work Planning and NDE Testing	1
OSH105+	Construction Safety	2

Associate in Applied Science in Construction Trades - Mechanical Trades: Plumbing (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades - Mechanical Trades: Plumbing program is designed to provide knowledge and skills in the residential, commercial, industrial, and institutional plumbing trade. Course work includes safety, material selection, installation of plumbing systems, basic and advanced plumbing calculations and principles of science. Students will also be competent in sources and treatment of public, private, and individual gas, water, heating, waste, and specialized piping systems, cross connection protection, pipe identification, blueprint reading and plumbing code. Additional related training will include basic electricity and troubleshooting related to the plumbing trade.

The program is designed to provide the student with the required classroom trade related training. The classroom training is supplemented with required on-the-job training that then leads the student to obtain the Journeyman Certificate. Two certificates are presented, one by the Arizona Department of Commerce, and the second by the US Department of Labor. The student is then recognized as having achieved "master status" in the plumbing trade.

Required Courses		33 Credits
Certificate of Completion in Construction Trades: Mechanical Trades: Plumbing		30
BPC/CIS+++++	Any BPC/CIS course(s)	3

Restricted Electives		5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:		
BPC+++++	Any BPC Business Personal Computers course(s)	
CAD+++++	Any CAD Computer Aided Drafting course(s)	
CNS+++++	Any CNS Construction course(s)	
IND+++++	Any IND Industry course(s)	
MEC+++++	Any MEC Mechanical Trades course(s)	
OSH+++++	Any OSH Occupational Safety and Health course(s)	
TDR+++++	Any TDR Trade related course(s)	
WLD+++++	Any WLD Welding Technology course(s)	

General Education Requirements		22-27 Credits
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES - MECHANICAL TRADES: SHEET METAL

Certificate of Completion

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following apprenticeship programs:

Arizona Builders Alliance (ABA)
1825 West Adams
Phoenix, Arizona 85017
602.274.8222
OR
The Plumbing, Heating, and Cooling Contractors Association (PHCC)
7635 West Hope Drive
Peoria, Arizona 85345
623.486.3324
OR
Tri City Mechanical
6875 West Galviston
Chandler, Arizona 85226
480.940.8400 Extension 150

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades - Mechanical Trades: Sheet Metal (30 Credits)

The Certificate of Completion (CCL) in Construction Trades - Mechanical Trades: Sheet Metal program is designed to provide knowledge in the Sheet Metal trade which will enable the student to apply master skills as a sheet metal worker. Course work will include: safety, basic sheet metal principles, trade calculations, piping practices, blueprint reading, refrigeration fundamentals, mechanical systems and heat pumps. Students will be competent in fabrication, triangulation, gutters, downspouts, chimneys, insulation and moisture prevention. The Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) manuals and standards will be supplemental materials used in the classroom. Additionally students will examine factors involved in estimating labor and materials, equipment and delivery.

Required Courses		30 Credits
Students should select thirty (30) credits from the following courses:		
MEC110+	Introduction to Sheet Metal	5
MEC114+	Sheet Metal: Insulation, Air, Layout and Fabrication	5
MEC126+	Sheet Metal: Trade Calculations	5
MEC128+	SMACNA Manuals and Standards	5
MEC226+	Construction Sheet Metal and Mechanical Systems I	5
MEC228+	Construction Sheet Metal and Mechanical Systems II	5
MEC230+	Construction Sheet Metal and Mechanical Systems III	5
MEC240+	Construction Sheet Metal and Mechanical Systems IV	5

Associate in Applied Science in Construction Trades - Mechanical Trades: Sheet Metal (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades - Mechanical Trades: Sheet Metal program is designed to provide knowledge in the Sheet Metal trade which will enable the student to apply master skills as a sheet metal worker. Course work will include: safety, basic sheet metal principles, trade calculations, piping practices, blueprint reading, refrigeration fundamentals, mechanical systems and heat pumps. Students will be competent in fabrication, triangulation, gutters, downspouts, chimneys, insulation and moisture prevention. The Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) manuals and standards will be supplemental materials used in the classroom. Additionally, students will examine factors involved in estimating labor and materials, equipment and delivery.

Required Courses		33 Credits
Certificate of Completion in Construction Trades: Mechanical Trades: Sheet Metal		30
BPC/CIS+++++	Any BPC/CIS course(s)	3

Restricted Electives		5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:		
BLT+++++	Any BLT Building Safety and Construction technology course(s)	
BPC+++++	Any BPC Business Personal Computers course(s)	
CAD+++++	Any CAD Computer Aided Drafting course(s)	
CNS+++++	Any CNS Construction course(s)	
GBS+++++	Any GBS General Business course(s)	
IND+++++	Any IND Industry course(s)	
MEC+++++	Any MEC Mechanical Trades course(s)	
MGT+++++	Any MGT Management course(s)	
OSH+++++	Any OSH Occupational Safety and Health course(s)	
SPA+++++	Any SPA Spanish course(s)	
TDR+++++	Any TDR Trade related course(s)	
WLD+++++	Any WLD Welding Technology course(s)	

General Education Requirements		22-27 Credits
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by assessment on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR Equivalent course OR Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: MILLWRIGHTING

Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Arizona Millwright Joint Apprenticeship and Training Committee
4547 West McDowell Road
Phoenix, AZ 85035
602.272.6547

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Millwrighting (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Millwrighting program is designed to provide knowledge and skills in the millwrighting trade. Coursework includes courses in millwrighting and welding. Specifically, the courses train apprentices to safely handle both shop and field jobs, to lay out and erect industrial machinery, to operate welding equipment, and to design, install, turbines, optics, conveyor systems, solar installation, and operate systems inherent to the millwrighting trade. Upon the completion of this apprenticeship program, students are considered journeymen in the millwrighting trade.

Required Courses   30 Credits
Students should select thirty (30) credits from the following courses:

MWR101+	Introduction to Millwrighting I	2
MWR102+	Introduction to Millwrighting II: OSHA Safety	2
MWR103+	Machinery Installation and Erection I	2
MWR104+	Machinery Installation and Erection II	2
MWR105+	Millwrighting General Skills	2
MWR106+	Math for Millwrighting, Hand, Power and Precision Tools	2
MWR107+	Drives, Pulleys and Belts	2
MWR108+	Blueprint Reading for Millwrighting I	2
MWR109	Turbine Familiarization	2
MWR201+	Optics and Machining Alignment	2
MWR202+	Conveyor Systems	2
MWR203+	Specialty Machinery I	5
MWR204+	Specialty Machinery II	5
MWR205+	Machinery Shaft Alignment	2
MWR206+	Rigging Hardware and Procedures	2
MWR207+	Advanced Precision Alignment Instruments	2
MWR208+	Pumps, Compressors and Flow Seals	2
MWR209+	Introduction to Wind Turbines	2
MWR210+	Introduction to Solar Installations	2
WLD100+	Basic Welding	2
WLD101	Welding I	3
WLD201 +	Welding II	3
TDR/WLD202+	Construction Welding III	3
WLD214+	American Welding Society Weld Certification Preparation	2
WLD215AA+	Weld Fabrication I for Millwrighting	2
WLD215AB+	Weld Fabrication II for Millwrighting	2

Associate in Applied Science in Construction Trades: Millwrighting (60-65 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Millwrighting degree is designed to provide journeymen status to the apprentice and to develop a general educational background. Students choose from electives, which contribute, to communication and liberal arts concepts in addition to trade skills. The associate degree program is for those individuals who may wish to continue their educational and leadership skills.

Required Courses   33 Credits

Certificate of Completion in Construction Trades: Millwrighting		30
BPC/CIS+++++	Any BPC/CIS Course(s)	3

Restricted Electives   5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT Building Safety and Construction course(s)
BPC+++++	Any BPC Business Personal Computers course(s)
CAD+++++	Any CAD Computer Aided Drafting course(s)
CNS+++++	Any CNS Construction course(s)
GBS+++++	Any GBS General Business course(s)
IND+++++	Any IND Industry course(s)
MGT+++++	Any MGT Management course(s)
MWR+++++	Any MWR Millwrighting course(s)
OSH+++++	Any OSH Occupational Safety and Health course(s)
SPA+++++	Any SPA Spanish course(s)
TDR+++++	Any TDR Trade related course(s)
WLD+++++	Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: PAINTING
Associate in Applied Science Degree
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Students are admitted to this program through:
Phoenix Painters and Drywall Joint Apprenticeship and Training Committee
1841 North 24th Street
Phoenix, AZ 85008
602.244.0768

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Associate in Applied Science in Construction Trades: Painting (67-71 Credits)
The Associate in Applied Science (AAS) in Construction Trades: Painting degree is designed to provide journeyman status to the apprentice. In addition to this status within the trade, the associate degree program helps to develop a general education background. Students take courses, which enhance communication and liberal arts concepts in addition to trade skills. The associate degree program is for those individuals who may wish to continue their education and leadership skills.

Required Courses		27 Credits
BPC/CIS+++++	Any BPC/CIS Course(s)	3
PNT101+	Basic Painting	4
PNT102+	Painting and Decorating	4
PNT103+	Color Mixing/Wood Finish	4
PTN104+	Special Decorative Finishes/Advanced Ladders and Scaffolding	4
PNT201+	Basic Blueprint/Blasting/Drywall Taping	4
PNT202+	Spray Painting/Coatings, Coverings	4

Restricted Electives		13 Credits
Choose 13 credits from the following:		
ACC111	Accounting Principles I	3
BLT263	Building Codes	3
CPD102AS	Conflict Resolution	2
DFT126	Building Trades Blueprint Reading	3
GBS151	Introduction to Business	3
GBS233	Business Communication	3
MGT229	Management and Leadership I	3
MGT251	Human Relation in Business	3

Free Electives	6 Credits

General Education Requirements		21-25 Credits
COM110	Interpersonal Communication	3
CRE101+	College Critical Reading (3) OR	
	Equivalent by on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	

	Satisfactory completion of a higher level mathematics course	3
PSY101	Introduction to Psychology (3) OR	
ECN211	Macroeconomic Principles (3)	3
Any general education course in the Humanities and Fine Arts area		2-3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: PAINTING AND DRYWALLING
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Painters and Drywall Joint Apprenticeship and Training Committee
1841 North 24th Street
Phoenix, AZ 85008
602.244.0768

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Painting and Drywalling (24 Credits)
The Certificate of Completion (CCL) program in Construction Trades: Painting and Drywalling is designed to provide knowledge and skills in the painting and drywalling trade. Course work includes courses in painting and drywalling. Specifically, the courses train apprentices to paint from ladders and scaffolds, prepare and paint various types of surfaces, and handle all types of painting equipment. Upon completion of this program, apprentices are considered to be journeymen in the painting trade.

Required Courses		24 Credits
PNT101+	Basic Painting	4
PNT102+	Painting and Decorating	4
PNT103+	Color Mixing/Wood Finish	4
PTN104+	Special Decorative Finishes/Advanced Ladders and Scaffolding	4
PNT201+	Basic Blueprint/Blasting/Drywall Taping	4
PNT202+	Spray Paintings/Coatings, Coverings	4

CONSTRUCTION TRADES: PIPE TRADES – PIPEFITTER-REFRIGERATION

Associate in Applied Science Degree
Certificate of Completion

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Arizona Pipe Trades Joint Apprenticeship
2950 W. Thomas Road
Phoenix, AZ 85017
602.269.8213

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Pipe Trades - Pipefitter - Refrigeration (79 Credits)

The Certificate of Completion (CCL) in Construction Trades: Pipe Trades - Pipefitter - Refrigeration program is designed to provide classroom theory and skills training necessary to qualify an apprentice for journeyman status in the refrigeration/air conditioning trade. The program consists of required courses which include safety procedures in shop and field work, theory installation, and service of total refrigeration and air conditioning systems and their components parts. The program is designed to provide training in the areas of heating, ventilation, refrigeration and air conditioning (HVACandR) systems, electricity, electronic controls and instrumentation, hydronics, electro-mechanical devices, and general repair. The associate degree program is designed to provide journeyman status to apprentices and to develop their general education background. The associate degree program is for those individuals who may wish to continue their educational and leadership skills.

Required Courses   79 Credits

Students should select seventy-nine (79) credits from the following courses:

BPC110	Computer Usage and Applications	3
FAC/HVA101+	Refrigeration Applications and Components I	2
FAC/HVA101LL+	Refrigeration Applications and Components I Lab	1
ELC/FAC/HVA105+	Electricity for Industry	3
ELC/FAC/HVA105LL+	Electricity for Industry Lab	1
ELC/FAC/HVA115+	Motors, Controls and Wiring Diagrams	3
ELC/FAC/HVA115LL+	Motors, Controls and Wiring Diagrams Lab	1
FAC/HVA186+	Electro-Mechanical Devices	3
FAC/HVA210+	Facilities Air Conditioning Systems	3
FAC/HVA210LL+	Facilities Air Conditioning Systems Lab	1
FAC220+	Controls and Instrumentation	3
FAC220LL+	Controls and Instrumentation Lab	1
FAC235+	Commercial Air and Water Test and Balance	3
FAC235LL+	Commercial Air and Water Test and Balance Lab	1

HVA103+	Refrigeration Applications and Components II	2
HVA103LL+	Refrigeration Applications and Components II Lab	1
HVA112+	Heating and Air Conditioning	3
HVA112LL+	Heating and Air Conditioning Lab	1
HVA143	Load Calculation and Duct Design	3
FAC/HVA231+	Codes	3
MAT103AA	Math for Industrial Applications I	2
MAT103AB+	Math for Industrial Applications II	2
PFT101+	Tools, Safety and Math	6
PFT101AA+	Trade Safety	2
PFT101AB+	Trade Tools	2
PFT101AD+	Trade Calculations	2
PFT102+	Basic Piping and Applications	6
PFT102AA+	Basic Piping and Applications I	2
PFT102AB+	Basic Piping and Applications II	2
PFT102AC+	Basic Piping and Applications III	2
IRW/PFT103+	Science, Rigging and Hoisting	6
PFT103AA+	Science and Mechanics	2
PFT103AB+	Rigging and Cranes	2
PFT103AC+	Hoisting and Intermediate Fitting Projects	2
PFT112+	HVAC I	6
PFT113+	Isometric Drawing	6
PFT113AA+	Isometric Drawing I	2
PFT113AB+	Isometric Drawing II	2
PFT113AC+	Isometric Drawing III	2
PFT202+	Chiller Diagnostics I	6
PFT205+	HVAC II	6
PFT207+	Pneumatic Controls	6
PFT210+	HVAC III	6
PFT213+	Pipefitters-Refrigeration Journeyman Examination Review, Application and Customer Relations	6

Associate in Applied Science in Construction Trades: Pipe Trades - Pipefitter - Refrigeration (101-106 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Pipe Trades - Pipefitter - Refrigeration program is designed to provide apprentices with trade-related classroom training in piping systems, environmental systems, package units and large tonnage refrigeration units for commercial and industrial facilities and to develop a general education background. This program is for those individuals who may wish to continue their educational and leadership skills.

Required Courses   79 Credits

Certificate of Completion in Construction Trades: Pipe Trades – Pipefitter-Refrigeration	79

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3)	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR Equivalent by assessment on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6

MAT120+	Intermediate Algebra (3) OR	
MAT121+	Intermediate Algebra (3) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level	
	mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Science area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: PIPE TRADES – PLUMBING
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by:
Phoenix Pipefitting Trades Joint Apprenticeship Committee
2950 West Thomas Road
Phoenix, AZ 85017
602.269.8213

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Pipe Trades – Plumbing (36 Credits)
The Certificate of Completion (CCL) in Construction Trades: Pipe Trades - Plumbing program is designed to provide knowledge and skills in the plumbing trade. Course work includes safety procedures in shop and field work, materials selection, and installation of plumbing systems. Installation procedures for special projects such as swimming pools and sprinklers are also part of the curriculum.

Required Courses		36 Credits
Students should select thirty-six (36) credits from the following courses:		
PFT101+	Tools, Safety and Math	6
PFT101AA+	Trade Safety	2
PFT101AB+	Trade Tools	2
PFT101AD+	Trade Calculations	2
PFT102+	Basic Piping and Applications	6
PFT102AA+	Basic Piping and Applications I	2
PFT102AB+	Basic Piping and Applications II	2
PFT102AC+	Basic Piping and Applications III	2
IRW/PFT103+	Science, Rigging and Hoisting	6
PFT103AA+	Science and Mechanics	2
PFT103AB+	Rigging and Cranes	2
PFT103AC+	Hoisting and Intermediate Fitting Projects	2
PFT110+	Drainage	6
PFT113+	Isometric Drawing	6
PFT113AA+	Isometric Drawing I	2
PFT113AB+	Isometric Drawing II	2
PFT113AC+	Isometric Drawing III	2

PFT201+	Drawing, Prints and Specifications	6
PFT201AA+	Drawing, Prints and Specs I	2
PFT201AB+	Drawing, Prints and Specs II	2
PFT201AC+	Drawing, Prints and specs II	2
PFT203+	Gas and Water Plumbing	6
PFT203AA+	Gas and Water Plumbing I	2
PFT203AB+	Gas and Water Plumbing II	2
PFT206+	Fixtures, Service and Special Purpose Installations	6
PFT206AA+	Fixtures	2
PFT206AB+	Service Work	2
PFT208+	Uniform Plumbing Code	6
PFT212+	Steamfitters and Plumbers Journeyman Examination Review, Application, and Supervision	6
PFT273+	Cross-Connection Control	2
PFT280+	Medical Gas Installer Certification	2

CONSTRUCTION TRADES: PIPE TRADES – STEAMFITTING
Certificate of Completion
To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Pipefitting Trades Joint Apprenticeship Committee
2950 West Thomas Road
Phoenix, AZ 85017
602.269.8213

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Pipe Trades - Steamfitting (36 Credits)
The Certificate of Completion (CCL) in Construction Trades: Pipe Trades - Steamfitting program is designed to provide classroom theory and skills training necessary to qualify an apprentice for journeyman status in steamfitting. The program consists of courses in safety procedures in shop and field work; math, science, and physics principles used in the fitting trades; materials selection; installation of piping systems; and welding techniques.

Required Courses		36 Credits
Students should select thirty six (36) credits from the following courses:		
PFT101+	Tools, Safety and Math	6
PFT101AA+	Trade Safety	2
PFT101AB+	Trade Tools	2
PFT101AD+	Trade Calculations	2
PFT102+	Basic Piping and Applications	6
PFT102AA+	Basic Piping and Applications I	2
PFT102AB+	Basic Piping and Applications II	2
PFT102AC+	Basic Piping and Applications III	2
IRW/PFT103+	Science, Rigging and Hoisting	6
PFT103AA+	Science and Mechanics	2
PFT103AB+	Rigging and Cranes	2

PFT103AC+	Hoisting and Intermediate Fitting Projects	2
PFT113+	Isometric Drawing	6
PFT113AA+	Isometric Drawing I	2
PFT113AB+	Isometric Drawing II	2
PFT113AC+	Isometric Drawing III	2
PFT114+	Basic Pipefitting and Welding	6
PFT114AA+	Basic Pipe Fitting and Welding I	2
PFT114AB+	Basic Pipe Fitting and Welding II	2
PFT114AC+	Basic Pipe Fitting and Welding III	2
PFT201+	Drawing, Prints and Specifications	6
PFT201AA+	Drawing, Prints and Specs I	2
PFT201AB+	Drawing, Prints and Specs II	2
PFT201AC+	Drawing, Prints and specs II	2
PFT209+	Welding	6
PFT211+	Steam and Hydronic Controls	6
PFT211AA+	Steam and Hydronic Controls I	2
PFT211AB+	Steam and Hydronic Controls II	2
PFT212+	Steamfitters and Plumbers Journeyman Examination Review, Application, and Supervision	6
PFT280+	Medical Gas Installer Certification	2
WLD101+	Welding I	3
WLD201+	Welding II	3
TDR/WLD202+	Construction Welding III	3

CONSTRUCTION TRADES: PLASTERING AND CEMENT MASONRY

Certificate of Completion

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Operative Plasterers' and Cement Masons
1425 E. McDowell Road
Phoenix, AZ 85006
602.258.8148

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Registered Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Plastering and Cement Masonry (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Plastering/Cement Masonry program is designed to provide apprentices with journeyman level skills in the plastering/cement masonry trade. The program is designed to provide knowledge of the working characteristics of various cement and concrete mixes, skills in the application of plaster, cement or acrylic finish products to the interior and exterior walls and ceilings; apply finish to exposed concrete surfaces of commercial and industrial projects.

Required Courses		30 Credits
Students should select thirty (30) credits from the following courses:		
IND135	Leadership in Construction	1
IND144	Improving Construction Productivity	1
IND150	Construction Foreman	2
PCM150+	Tools for Exterior and Veneer Systems	5
PCM152	Cement Pouring and Finishing	5
PCM153+	Sketching and Plan Reading	5
PCM154+	Architectural Drawing and Blueprint Reading	5
PCM155+	Estimating for the Concrete Trade	5
PCM157+	Trade Math and Safety for Concrete	5
PCM202+	Interior and Exterior Basecoat	5
PCM204+	Advanced Veneer Systems	5

CONSTRUCTION TRADES: PLUMBING

Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Pipefitting Trades Joint Apprenticeship Committee
2950 West Thomas Road
Phoenix, AZ 85017
602.269.8213

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Associate in Applied Science in Construction Trades: Plumbing (66-71 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Plumbing program is designed to provide journeyman status to apprentices and to develop their general education background. The associate degree program is for those individuals who may wish to continue the development of their educational and leadership skills.

Required Courses		39 Credits
Certificate of Completion in Construction Trades: Pipe Trades - Plumbing		36
BPC/CIS+++++	Any BPC/CIS Course(s)	3

Restricted Electives		5 Credits
Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:		
BLT+++++	Any BLT Building Safety and Construction course(s)	
BPC+++++	Any BPC Business Personal Computers course(s)	
CAD+++++	Any CAD Computer Aided Drafting course(s)	
CNS+++++	Any CNS Construction course(s)	
GBS+++++	Any GBS General Business course(s)	
IND+++++	Any IND Industry course(s)	
MGT+++++	Any MGT Management course(s)	
OSH+++++	Any OSH Occupational Safety and Health course(s)	
PFT+++++	Any PFT Pipefitter-Refrigeration courses(s)	
SPA+++++	Any SPA Spanish course(s)	

TDR+++++   Any TDR Trade Related course(s)
WLD+++++   Any WLD Welding Technology course(s)

General Education Requirements   22-27 Credits

COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by assessment on District Placement exam	0-3
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (3) OR	
MAT121+	Intermediate Algebra (3) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Science area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: ROOFING

Certificate of Completion

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by:
Arizona Roofers Joint Apprenticeship and Training Committee
1917 East Washington Street
Phoenix, AZ 85034
602.254.7059

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Roofing (25 Credits)

The Certificate of Completion (CCL) in Construction Trades: Roofing program is designed to provide knowledge and skills in the roofing trade. Specifically, the courses train apprentices to handle tools, equipment and materials necessary to apply roofs. Apprentices are trained in various application methods and are also trained to troubleshoot and maintain roofs. At the end of their program, apprentices are considered to be journeymen in the roofing trade.

Required Courses   25 Credits

ROF101+	Built-up Roofing I	5
ROF102+	Built-up Roofing II	5
ROF103+	Elasto-Plastic Roof Systems	5
ROF104+	Steep Roofing	5
ROF105+	Single Ply Roofing	5

CONSTRUCTION TRADES: SHEET METAL

Certificate of Completion
Associate in Applied Science Degree

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Sheet Metal Joint Apprenticeship and Training Committee
2534 East Adams Street
Phoenix, AZ 85034
602.275.6511

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Certificate of Completion in Construction Trades: Sheet Metal (30 Credits)

The Certificate of Completion (CCL) in Construction Trades: Sheet Metal program is designed to provide apprentices with journeyman level skills in the sheet metal trade. The program consists of trade subjects in sheet metal pattern drafting; hand, power, and shop tools and equipment; sheet metal and sheet metal materials; blueprint reading, heating, ventilation and air conditioning, field installation; and welding.

Required Courses   30 Credits

Students should select thirty (30) credits from the following courses:

MEC/SML226+	Construction Sheet Metal and Mechanical Systems I	5
MEC/SML228+	Construction Sheet Metal and Mechanical Systems II	5
MEC/SML230+	Construction Sheet Metal and Mechanical Systems III	5
MEC/SML240+	Construction Sheet Metal and Mechanical Systems IV	5
SML111+	Sheet Metal I	5
SML112+	Sheet Metal II	5
SML113+	Sheet Metal III	5
SML114+	Sheet Metal IV	5
SML115+	Basic Refrigeration	5
SML116+	Refrigeration Systems I	5
SML117+	Refrigeration Systems II	5
SML118+	Refrigeration Systems III	5
SML119+	Refrigeration Systems IV	5
SML120+	Refrigeration Systems V	5
SML121+	Refrigeration Systems VI	5
SML122+	Refrigeration Systems VII	5
SML130+	Insulation, Air, Layout and Fabrication	5
SML211+	Sheet Metal V	5
SML212+	Sheet Metal VI	5
SML213+	Sheet Metal VII	5
SML214+	Sheet Metal VIII	5
SML215+	Ducts, Drainage and Ventilation	5
SML216+	Duct Systems and Methods of Welding	5

SML217+	Blueprint Reading and Principles of Air Conditioning	5
SML220+	Environmental Systems I	5
WLD101+	Welding I	3
WLD131+	Ferrous Metals	3
WLD201+	Welding II	3

Associate in Applied Science in Construction Trades: Sheet Metal (60-65 Credits)

The Associate in Applied Science Degree is designed to provide apprentices with a broadened educational background. Students completing the associate degree program will be better equipped to enter supervisory managerial positions.

Required Courses		**33 Credits**
Certificate of Completion in Construction Trades: Sheet Metal		30
BPC/CIS+++++	Any BPC/CIS Course(s)	3

General Education Requirements		**22-27 Credits**
COM100	Introduction to Human Communication (3) OR	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by assessment on District Placement exam	0-3
ENG101+	First-Year Composition (3) AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
MAT120+	Intermediate Algebra (5) OR	
MAT121+	Intermediate Algebra (4) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Sciences area		3
Any general education course in the Natural Sciences area		4

CONSTRUCTION TRADES: STEAMFITTING

Associate in Applied Science

To qualify, students must earn a grade of "C" or better in all required courses.

Admission Criteria: Admission to the program by the following registered apprenticeship program: Phoenix Pipefitting Trades Joint Apprenticeship Committee
2950 West Thomas Road
Phoenix, AZ 85017
602.269.8213

Program Accreditation/Certification or Licensure Information: Journeyman status through the Arizona Department of Commerce, Apprenticeship Services Division, U.S. Department of Labor, Bureau of Apprenticeship and Training.

Associate in Applied Science in Construction Trades: Steamfitting (66-71 Credits)

The Associate in Applied Science (AAS) in Construction Trades: Steamfitting program is designed to provide journeyman status to apprentices and to develop their general education background. The associate degree program is for those individuals who may wish to continue the development of their educational and leadership skills.

Required Courses		**39 Credits**
Certificate of Completion in Construction Trades: Pipe Trades – Steamfitting		36
BPC/CIS+++++	Any BPC/CIS Business-Personal Computers OR Computer Information Systems course(s)	3

Restricted Electives		**5 Credits**

Students should select five (5) credits, except courses used to satisfy Required Courses area, from the following courses:

BLT+++++	Any BLT Building Safety and Construction course(s)
BPC+++++	Any BPC Business Personal Computers course(s)
CAD+++++	Any CAD Computer Aided Drafting course(s)
CNS+++++	Any CNS Construction course(s)
GBS+++++	Any GBS General Business course(s)
IND+++++	Any IND Industry course(s)
MGT+++++	Any MGT Management course(s)
OSH+++++	Any OSH Occupational Safety and Health course(s)
PFT+++++	Any PFT Pipefitter-Refrigeration courses(s)
SPA+++++	Any SPA Spanish course(s)
TDR+++++	Any TDR Trade Related course(s)
WLD+++++	Any WLD Welding Technology course(s)

General Education Requirements		**22-27 Credits**
ENG101+	First-Year Composition AND	
ENG102+	First-Year Composition (3) OR	
ENG111+	Technical and Professional Writing (3)	6
COM100	Introduction to Human Communication (3)	
COM110	Interpersonal Communication (3) OR	
COM230+	Small Group Communication (3)	3
CRE101+	College Critical Reading (3) OR	
CRE111+	Critical Reading for Business and Industry (3) OR	
	Equivalent by Assessment	0-3
MAT120+	Intermediate Algebra (3) OR	
MAT121+	Intermediate Algebra (3) OR	
MAT122+	Intermediate Algebra (3) OR	
	Equivalent course OR	
	Satisfactory completion of a higher level mathematics course	3-5
Any general education course in the Humanities and Fine Arts area		3
Any general education course in the Social and Behavioral Science area		3
Any general education course in the Natural Sciences area		4

ACCOUNTING (ACC)

ACC105   3 Credits   3 Periods
Payroll, Sales and Property Taxes
Tax reporting for payroll, sales and personal property. Prerequisites: None.

ACC111   3 Credits   3 Periods
Accounting Principles I
Fundamental theory of accounting principles and procedures. Prerequisites: None.

ACC112   3 Credits   3 Periods
Accounting Principles II
Continuation of the fundamental theory of accounting principles and procedures, including interpretation of general purpose financial statements. Prerequisites: ACC111 with a grade of "C" or better, or permission of department/division.

ACC115   2 Credits   3 Periods
Computerized Accounting
Mastery of a microcomputer accounting system including the general ledger, accounts receivable, accounts payable and payroll. Prerequisites: ACC107 or higher level accounting course or permission of instructor.

ACC121   3 Credit   3 Periods
Income Tax Preparation
Preparation of and practical experience in preparing individual federal income tax returns using computer software. Prerequisites: None.

ACC211   3 Credits   3 Periods
Financial Accounting
Introduction to theory and practice in the preparation and interpretation of general purpose financial statements. Prerequisites: None.

ACC212   3 Credits   3 Periods
Managerial Accounting
Development and analysis of accounting information for managerial planning and control. Prerequisites: A grade of "C" or better in (ACC111 and 112), or ACC211, and (CIS105 or permission of department/division).

ACC221   3 Credits   3 Periods
Tax Accounting
Preparation of and accounting procedures for individuals; introduction to partnerships and corporate tax structures. Prerequisites: ACC111 or ACC211 or permission of department/division.

ACC230   3 Credits   3 Periods
Uses of Accounting Information I
Introduction to the uses of accounting information for internal and external purposes with emphasis on financial statement analysis. Prerequisites: Grade of "C" or better in ACC111 or ACC211, or a grade of "C" or better in (ENG101 and MAT151 and CRE101), or equivalent, or satisfactory score on District placement exam.

ACC240   3 Credits   3 Periods
Uses of Accounting Information II
Introduction to the uses of accounting information for internal and external purposes with emphasis on analysis for use by management. Prerequisites: ACC230.

ACC250   1 Credit   3 Periods
Introductory Accounting Lab
Procedural details of accounting for the accumulation of information and generation of reports for internal and external users. Prerequisites: None.

ANTHROPOLOGY (ASB/ASM)

ASB102   3 Credits   3 Periods
Introduction to Cultural and Social Anthropology
Principles of cultural and social anthropology with illustrative materials from a variety of cultures. The nature of culture; social, political and economic systems; religion, esthetics and language. Prerequisites: None.

ASB202   3 Credits   3 Periods
Ethnic Relations in the United States
Basic concepts and processes, including historic overview, of interethnic relations in the United States: culture, race, ethnicity, ethnocentrism, prejudice, discrimination, racism, assimilation, acculturation, and individual and group responses to interethnic contact. Cultural knowledge and intercultural communication skills and perspectives as fundamental tools for successful management of social relations in a multicultural world. Prerequisites: None.

ASB214   3 Credits   3 Periods
Magic, Witchcraft, and Healing: An Introduction to Comparative Religion
Origins, elements, and forms of religion; a comparative survey of religious beliefs, myths, rituals and symbolism including magic, witchcraft and healing as practiced in selected regions of the world; the place of religion in the total culture. Prerequisites: None.

ASB222   3 Credits   3 Periods
Buried Cities and Lost Tribes: Old World
Introduction to archaeology through discoveries and the researchers who made them. Emphasis on methods of archaeological fieldwork and what these discoveries reveal about humanity, including the nature of archaeological inquiry, the development of human social groups, the changing role of religion in evolving societies, the origins of agriculture, the origins of settled lifeways, the rise of cities and complex societies, political strife across different cultures and the forces which tend to fragment societies. Examples drawn from Africa, Asia, Europe, the Pacific Islands, and Australia. Prerequisites: None.

ASB223   3 Credits   3 Periods
Buried Cities and Lost Tribes: New World
Introduction to archaeology through discoveries and the researchers who made them. Emphasis on methods of archaeological fieldwork and what these discoveries reveal about humanity including the nature of archaeological inquiry, the development of human social groups, the changing role of religion in evolving societies, the origins of agriculture, the origins of settled lifeways, the rise of cities and complex societies, political strife across different cultures and the forces which tend to fragment societies. Examples drawn from North America, Central America, and South America. Prerequisites: None.

ASB245   3 Credits   3 Periods
Indians of the Southwest
Comparative study of the cultures, including the histories and present status, of Indians of the Southwest. Prerequisites: None.

ASM104   4 Credits   5 Periods
Bones, Stones, and Human Evolution
Study of human evolution and variation; including fossil hominids and their tools, primate anatomy and behavior, human genetics, and the environment and human biology. Prerequisites: None.

ARIZONA BUILDERS ALLIANCE (ABA/ABC)

ABA101   1 Credit   1 Period
Hand and Power Tools
Selection, use, maintenance and safety procedures for common hand and power tools used in the construction industry. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA102   1 Credit   1 Period
Electrical Fundamentals
Fundamentals of electricity including electrical hazards, Occupational Safety and Health Administration (OSHA) regulations, units of measurements and using Ohm's law. Circuit characteristics and the use of Kirchoff's voltage and current laws to calculate voltage drop, current and resistance. Operation and use of specific meters. Includes an introduction to the National Electrical Code (NEC). Prerequisites: None.

ABA103   0.5 Credit   0.5 Period
Hand Bending of Electrical Conduit
Conduit bending and installation. Techniques for using hand operated and step conduit benders. Cutting, reaming and threading conduit. Prerequisites: None.

ABA104   1.5 Credits   1.5 Periods
Raceways, Boxes, Fittings, Anchors/Supports
Types and applications of conduit, raceways, wireways and ducts. Types, applications and wiring techniques for conductors. Hardware and systems used to mount and support boxes, receptacles and other electrical components. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA106   0.5 Credit   0.5 Period
Introduction to Materials Handling
Introduction to materials handling equipment and appropriate use for common job-site tasks. Recognize hazards associated with materials handling and proper techniques and procedures. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA120   1 Credit   1 Period
Carpentry Fundamentals
Overview of the carpentry trade. Apprenticeship programs and responsibilities of the apprentice. Types and uses of nails, fasteners and adhesives. Types of wood, lumber and manufactured wood products. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA130   1 Credit   1 Period
Installation of Electric Services
Electric services for commercial and industrial installations. Blueprints, diagrams and electrical calculations. Grounding, connecting three phase services and the installation of panel boards, switches and load centers. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA135   1 Credit   1 Period
Cast-In-Place Stairs
Cast-In-Place and Precast stair installation techniques, forming, erecting and safety procedures. Review American Concrete Institute (ACI) Codes and standard specifications. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

ABA136   1 Credit   1 Period
Communications in Construction
Communication in the construction industry. Positive direct communication, written communication, active listening, understanding, negotiation, and dealing with difficult people. Communication skills at all organizational levels, with groups, combining oral and written communication for maximum effectiveness. Prerequisites: None.

ABA150   1.5 Credits   1.5 Periods
Advanced Calculations for Electricians
Advanced mathematical calculations in the electrical industry. Powers and roots in watts, voltage, current and resistance. Metric and engineering units. English and metric systems for length, area, volume and mass, and energy and temperature measurements. Ratios, proportions, formulas, symbols and representation. Trigonometry and the Pythagorean theory. Plane and rotating vectors. Basic functions of the scientific calculator for electricians. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

ABA201   1 Credit   1 Period
Overcurrent Protection
Overcurrent protection including terminology, safety factors, conformance to the National Electrical Code (NEC), fuses, circuit breakers and short circuits. Selection and sizing of overcurrent protection. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA202   1 Credit   1 Period
Conductor Selection and Calculations
Conductor characteristics and selection criteria for specific applications. National Electrical Code (NEC) regulations governing conductors and conductor protection methods for single and branch circuits. Calculations for voltage drop and sizing for specific Loads. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA203   1 Credit   1 Period
Load Calculations - Branch Circuits
Load calculations for single-phase and three-phase branch circuits. Sizing branch circuit overcurrent protection devices. Derating factors and calculating ampacity for single-phase and three-phase loads. Use of National Electrical Code (NEC) to calculate residential loads. Selecting branch circuit conductors and overcurrent protection devices for electric heat, air conditioning equipment, motors and welders. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA204   1 Credit   1 Period
Contactors and Relays
Operating principals of contactors and relays. Function in an electrical system. Operation and installation of specific contactors and relays. Interpretation of wiring diagrams. Connect and test a simple control circuit. Prerequisites: None.

ABA207   1 Credit   1 Period
Construction Trades: Green Environment
Daily activities at work and at home that affect green environment. Leadership in Energy and Environmental Design (LEED) rating process. Carbon footprint and ways to reduce it. Construction of buildings that affect green environment. Application of principles of green building rating system. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

ABA222   2 Credits   3 Periods
Introduction to Welding, Brazing, and Cutting
Arc welding theory and safety hazards. AC, DC and AC-DC welding machines. Use of electrodes and safety requirements for arc-welding. Basic welding techniques and gas metal-arc and gas tungsten-arc welding processes. Brazing and cutting using an oxyacetylene torch. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

ABA251   1 Credit   1 Period
High Voltage Termination and Splicing
Terminations and splices in high voltage systems (600+ volts). Identifying and splicing specific types of cables and making terminations. Includes using splicing kits and following manufacturer's specifications. Testing techniques and calculations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA252   1 Credit   1 Period
Load Calculations Feeder and Services
Calculating basic electrical Loads. Load calculations for residential, commercial and industrial facilities, including primary feeder Loads, service Loads, lighting, motors, special Loads and heating, ventilation and air conditioning (HVAC). Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA253   1 Credit   1 Period
Motor Maintenance-Part 2
Principles of electric motor operation including reduced voltage starting. Properties of insulation and motor service conditions. Dielectric Voltage Withstand Test. Cleaning and drying electrical insulation. Troubleshooting electric motors. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA254   1.5 Credits   1.5 Periods
Advanced Motor Controls
Operating principles of motor controls including solid-state controls. Motor braking, jogging, plugging and safety. Introduction to Programmable Logic Controller (PLC) motor programming. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA255   0.5 Credit   0.5 Period
Commercial, Industrial and Specialty Lighting
Operating characteristics of incandescent, fluorescent and high intensity discharge lamps. Lighting controls and fixture installations. Blueprint reading exercise for commercial and industrial installations. Lighting requirement calculations. National Electrical Code (NEC) requirements for specialty lighting fixtures. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA256   1 Credit   1 Period
Fire Alarm Systems
Operating principles of fire alarm systems. Components of fire alarm and security systems. Installation of heat and smoke detectors. National Electrical Code (NEC) requirements. Troubleshooting and maintaining fire alarm systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA257   2 Credits   2 Periods
Specialty Transformers and Emergency Systems
Operation of specialty transformers. Harmonics and problem solving techniques. Operating principles of engine-driven generators and alternators. Manual and automatic transfer switches. National Electrical Code (NEC) requirements for standby emergency systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABA258   1 Credit   1 Period
Special Locations
Various electrical device requirements for special locations such as assembly occupancies, theaters, carnivals, agricultural buildings, marinas, temporary installations, wired partitions, water installations. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

ABC117   2 Credits   2 Periods
Pipe Cutting and Installation
Setting-up and operation of oxyacetylene equipment including flame cutting, straight and bevel cuts, marking and cutting pipe. Installation of pipe hangers, supports, rod attachments and masonry anchors. Safety stressed. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

ABC118   1.5 Credits   1.5 Periods
OSHA Standards and Regulations
Provisions of and implementation of OSHA (Occupational Safety and Health Administration) Act in the work place. Rights and responsibilities under the OSHA Act. Appeals process, record keeping, and voluntary protection programs. OSHA's construction and general industry standards. Overview of the requirements of the more frequently referenced standards. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC120   1.5 Credits   1.5 Periods
Basic Calculations for Construction
Addition, subtraction, multiplication and division of whole, decimal, fractional and metric numbers. Metric units of length, weight, volume and temperature. Metric system as it relates to the construction trade. Basic algebraic operations and equations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC121　　1 Credit　　1 Period
Introduction to Hand and Power Tools
Overview of the use, maintenance and safety procedures for common hand and power tools. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC122　　1 Credit　　1 Period
Rigging Safety and Equipment
Rigging safety, equipment and inspection. Includes crane hand signals, common rope knots, types of derricks and cranes and safety procedures for rigging and moving materials and equipment. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC123　　0.5 Credit　　0.5 Period
Introduction to Construction Drawings
Basic concepts of construction drawings, including terms and symbols. Drawing interpretation, use of drawing dimensions and recognition of drawing classifications. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC124　　1 Credit　　1 Period
Conduit Bending
Types of conduit benders and bends. Conduit bending procedures and use of bends in conduit systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC127　　1.5 Credits　　1.5 Periods
Electrical Wiring and Blueprints
Electrical wiring; commercial, industrial and residential. Switches, ground fault circuit interrupters, wiring techniques, installation receptacles, service entrance installation, outlet boxes and lighting fixtures. Introduction to electrical blueprints. Lab activities in electrical wiring. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC129　　0.5 Credit　　0.5 Period
Electrical Boxes and Fittings
National Electrical Code (NEC) criteria for selection of outlet boxes, pull boxes and junction boxes. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC130　　1 Credit　　1 Period
Conductor Installation/Termination
Transportation, storage and setup of cable reels, methods of rigging and procedures for installing conductors using cable pulls in raceways and cable trays. Also methods of terminating and splicing conductors. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC131　　0.5 Credit　　0.5 Period
Cable Tray Installation
National Electrical Manufacturer's Association (NEMA) and National Electrical Code (NEC) requirements for cable tray modified installation and cable installation procedures. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC132　　1 Credit　　1 Period
Circuit Breakers and Fuses
National Electrical Code (NEC) requirements, Ground Fault Circuit Interrupters (GFCI), overcurrents, fuse sizing, safety techniques and short-circuit calculations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC133　　1 Credit　　1 Period
Basic Lighting
Principles of illumination and specific light sources. Includes practical applications for residential, commercial and industrial installations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC135　　1 Credit　　1 Period
Fundamentals of Concrete
Materials used to make concrete, including specific types of cement, aggregate, admixtures and reinforcing materials. Handling procedures for concrete, conveying and placing concrete and finishing techniques for concrete slab. Construction of foundations and formwork. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC142　　1 Credit　　1 Period
Alternating Current
Production of electricity, including; current, voltage, induction, mutual inductance and capacitance. Calculations using Ohms Law. Operation of a three phase system. Prerequisites: Registered apprentice status and ABC/MEC120 or permission of the apprenticeship coordinator.

ABC143　　2 Credits　　2 Periods
Motors: Theory and Application
Overview of electric motors including types, operation, and applications. Assembly and disassembly. Mounting and connections according to National Electrical Code (NEC). Also troubleshooting, installation and handling. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC144　　1 Credit　　1 Period
Grounding
Types of grounding and proper installation of grounds and grounding. OSHA and National Electrical Code (NEC) requirements specific to grounding. Purpose and operation of Ground Fault Circuit Interrupters (GFCI). Effects of soils and environment. Selection of grounds and grounding material for specific situations. Testing grounds with a "megger." Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC221　　3 Credits　　3 Periods
Motors and Motor Controls
Electrical symbols, line diagrams and logic. Contactors and starters, control devices, reversing circuits and power distribution systems. Electronic control devices, programmable controllers, reduced voltage starters, accelerating and decelerating methods and circuits. Preventive maintenance and trouble shooting. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

ABC222   1 Credit   1 Period
Hazardous Locations-Electrical
Hazardous location classifications. Equipment approved for use in specific hazardous locations. Wiring methods. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC223   1.5 Credits   1.5 Periods
Electrical Distribution Systems
Distribution systems, electrical drawings and identification of electrical symbols. National Electrical Code (NEC) regulations governing distribution systems. High and low voltage portions of distribution systems. Component connection, transformer operation and calculation of transformer sizes and maximum loads for Open-Delta systems. Practical applications for capacitors and rectifiers. Calculation of power factor of electrical circuits and trouble shooting. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC226   1.5 Credits   1.5 Periods
Raceways, Wiring Devices, Boxes and Fittings
Sizing, selecting, and installing raceways, junction boxes, outlet boxes and wiring devices. Calculating fill requirements according to National Electrical Code (NEC) regulations. Calculating bending radii in boxes and cabinets. Types and purpose of wiring devices and calculating maximum loads on such devices. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC266   0.5 Credit   0.5 Period
Basic Electronic Theory
Electronic system components. Solid state devices and component materials. Transistor types and functions, schematics and diagrams. Light Emitting Diodes (LEDs), and Silicon Controlled Rectifiers (SCRs). Operating principles of integrated circuits and basic operational amplifier circuits. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC269   1 Credit   1 Period
HVAC Controls and Heat Tracing
Heating, ventilation and air conditioning (HVAC) control systems including temperature sensing devices, control components, National Electrical Code (NEC) requirements, solid state controls, packaged HVAC units, programmable controllers and installation procedures. Heat tracing and freeze protection including explanation of use, types of systems, installation procedures, inspection and maintenance and NEC requirements. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ABC276   1 Credit   1 Period
Lamps, Ballasts and Components
Incandescent, tungsten halogen, florescent, and high-intensity discharge (HID) lamps. Voltage, watts, lumens, and lamp life. Fluorescent, electronic, and HID ballasts. Automatic lighting, occupancy sensors, photo sensors, and timers. Troubleshooting and energy management systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ART (ART)

ART111   3 Credits   6 Periods
Drawing I
Fundamental principles of drawing. Emphasis on composition and facility in objective and expressive representation, using variety of drawing media. Prerequisites: None.

ART122   3 Credits   6 Periods
Drawing and Composition II
Emphasis on composition and exploration of drawing media. Prerequisites: ART111.

ART167   3 Credits   6 Periods
Painting I
Exploration of technical and expressive possibilities of various painting media in easel painting. Prerequisites: (ART111 and ART112), or permission of instructor.

ART290AB   2 Credits   4 Periods
Studio Art
Studio course for art majors allowing continuation in a subject field. Prerequisites: Permission of Instructor. ART290AB may be repeated for credits.

ART298AC   3 Credits   3 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of Program Director or instructor.

ART HUMANITIES (ARH)

ARH101   3 Credits   3 Periods
Prehistoric through Gothic Art
History of art from prehistoric through medieval period. Prerequisites: None.

ARH102   3 Credits   3 Periods
Renaissance through Contemporary Art
History of art from around the world from the Renaissance through contemporary period. Prerequisites: None.

AUTOMATION TECHNOLOGY (ATP)

ATP101   2 Credits   2 Periods
Introduction to Automated Systems and Robotics
An introduction to mechanization, distribution systems, Automated Storage and Retrieval Systems (ASRS), and the role of the manufacturing technician. Includes general manufacturing techniques, industry standards, and statistical process control. Prerequisites: None.

ATP105   2 Credits   2 Periods
Engineering Documentation
Analysis and interpretation of engineering documentation, common to manufacturing processes. Prerequisites: None.

ATP110   **2 Credits**   **2 Periods**
Basic Manufacturing Processes
Introduction to the traditional manufacturing processes used to cut, shape, process, and assemble materials into the tools and equipment used to support industry and consumer needs. Processes explored include machining, casting, welding, heat treating, coatings, and assembly. Prerequisites: None.

ATP130   **2 Credits**   **2 Periods**
DC Circuit Analysis
Direct current (DC) electric circuits. Ohm's law, Kirchoff's laws, series, parallel and series-parallel circuits, network theorems, fundamentals of magnetism in electric circuits. Prerequisites: None.

ATP135   **2 Credits**   **3 Periods**
AC Circuit Analysis
Alternating Current (AC) circuits containing resistance and reactance. Detailed coverage of AC circuit parameters, including theorems, impedance matching, and resonance. Prerequisites: None.

ATP150   **2 Credits**   **3 Periods**
Fluid Power 1 – Hydraulics, Pneumatics, and Vacuum Concepts
Fundamental fluid power and vacuum for industry. Pneumatic, hydraulic, and vacuum system technologies with emphasis on assembly, integration, and measurement. Prerequisites: None.

ATP160   **2 Credits**   **3 Periods**
Programmable Logic Controllers 1 – Introduction to Ladder Logic
Integration of Human Machine Interfaces (HMI) to Programmable Logic Controllers (PLC's). Memory usage and types of HMI systems. Prerequisites: None.

ATP175   **2 Credits**   **3 Periods**
Introduction to Motors and Motor Controls
Introduction to direct current and alternating current (AC) motors, types of direct current and alternation motors. Prerequisites: None.

ATP180   **2 Credits**   **3 Periods**
Programmable Logic Controllers 2 - Human-Machine Interfaces and Function Block Programming
Principles and applications of Programmable Logic Controls (PLC's). Control strategies, and ladder logic. Basic automation functions and operations to include programming, troubleshooting and maintenance. Application of PLC programming, operations and troubleshooting skills. Prerequisites: ATP130 and ATP135.

ATP200   **2 Credits**   **3 Periods**
Sensors and Measurement
Applications of sensors and measurement including correct sizing and application. Prerequisites: ATP130 and ATP135, or permission of Instructor.

ATP215   **2 Credits**   **3 Periods**
Digital and Analog Circuits
Introduction to the characteristics and design of basic analog and digital circuits and their application to controlling complex systems. Prerequisites: ATP130 and ATP135, or permission of Instructor.

ATP222   **2 Credits**   **3 Periods**
Servo Systems
Introduction to the industrial applications of Servo Systems specifically in automated systems. Instruction includes concepts, applications, and maintenance of servos and the control systems for servo installations. Prerequisites: ATP175 or permission of Instructor.

ATP235   **2 Credits**   **3 Periods**
Automation Using CNC Programming
Computer Numerical Control (CNC) Programming of Word Address Language (G&M Code) for CNC Machine tools. Two and three-axis CNC Programming for CNC controlled machines. CNC tool-path program structure and CNC machine tool-path simulation using CNC tool path simulator. Tooling, Speeds, Feeds and material removal as related to CNC machine tools and CNC controlled machines. Prerequisites: ATP110 or permission of Instructor.

ATP245   **3 Credits**   **4 Periods**
Introduction to Solid Modeling - SolidWorks
Concepts of engineering documentation to solid model mechanical design. Feature-based parametric modeling techniques for technical communication. Creation of solid models and technical documents of mechanical parts and assemblies per the American Society of Mechanical Engineers (ASME) Y14 standards. Prerequisites: ATP105 or permission of Instructor.

ATP251   **2 Credits**   **3 Periods**
Fluid Power 2 - Automation Applications
Application of the basic Fluid Power principles of Hydraulics, Pneumatics, and Vacuum to the control of automated systems used to produce products through the application of discrete and hybrid electromechanical systems. Prerequisites: ATP150 or permission of Instructor.

ATP260   **2 Credits**   **3 Periods**
Industrial Automation System Integration 1
Overview of the evaluation and planning activities needed to establish a functioning automated manufacturing application. Prerequisites: ATP175 and ATP180, or permission of Instructor.

ATP265   **2 Credits**   **3 Periods**
Industrial Automation System Integration 2
A coordinating course regarding the implementation of the planning, construction, and industrial control systems needed for the development of a functional automated system. Prerequisites: ATP260 or permission of Instructor.

ATP290   **3 Credits**   **3 Periods**
Lean and Six Sigma Techniques
Survey and application course regarding the utilization of Lean and six sigma techniques to enhance manufacturing processes. Prerequisites: None.

AUTOMOTIVE (AUT)

AUT103AA   **6 Credits**   **10 Periods**
Automotive Electrical Systems
Basic principles and fundamentals of automotive electricity and electrical systems. Training in diagnosis; service and reconditioning procedures of automotive starting, charging and ignition; and electrical circuits and components. Prerequisites: None.

AUT104AA   **3 Credits**   **5 Periods**
Automotive Fuel Systems
Theory and operation of fuel injection, engine control management, turbo charging and fuel systems, training in diagnosis, service and reconditioning procedures. Prerequisites: AUT103AA, or AUT103AB, or permission of instructor.

AUT105AA   **3 Credits**   **5 Periods**
Engine Performance and Diagnosis
The theory and fundamentals of automotive engine management troubleshooting and oscilloscope testing as it pertains to diagnosis and tune-up of the modern day automobile. Emphasis on interpretation of oscilloscope patterns and Scantool Data as they relate to engine performance. Prerequisites: (AUT103AA or AUT103AB) and AUT104AA, or permission of Instructor.

AUT106AC   **3 Credits**   **5 Periods**
Engine Overhaul and Reconditioning: Heads and Valves
Diagnostic and service skills essential to service and repair of the cylinder head and valve train of contemporary automotive engines. Includes valve, guide, and seat reconditioning and service. Does not include block and crankshaft service. Prerequisites: AUT103AA or permission of instructor.

AUT107AA   **3 Credits**   **5 Periods**
Automotive Air Conditioning
Theory and principles of refrigeration and air conditioning. Training in diagnosis, servicing and reconditioning procedures of automotive air conditioning systems. Prerequisites: None.

AUT108AA   **6 Credits**   **10 Periods**
Front-End Suspension, Steering, and Alignment
Fundamentals and principles of suspension and steering systems. Diagnosis, service and reconditioning procedures. Laboratory emphasis on front-end alignment and wheel balancing. Prerequisites: AUT103AA or permission of instructor.

AUT109AA   **3 Credits**   **5 Periods**
Automotive Brake Systems
Fundamentals and principles of hydraulics and automotive braking systems. Diagnosis, service and reconditioning procedures of automotive braking systems. Prerequisites: None.

AUT110AA   **3 Credits**   **5 Periods**
Automotive Transmissions and Power Trains
Fundamentals and principles of transmissions, clutches, planetary gearsets, fluid coupling, drive lines and differentials. Diagnosis, service and reconditioning procedures. Includes minor diagnosis and service procedures for automatic transmissions. Prerequisites: None.

AUT123   **6 Credits**   **16 Periods**
Automatic Transmissions
Theory of operation and servicing procedures for current automatic transmissions. Prerequisites: (AUT103AA and AUT104AA) or permission of instructor.

AUT130   **3 Credits**   **5 Periods**
Automotive Quick Service
Use of manufacturer service manuals and performance of commonly used service operations. Emphasize on good attitude development and safety habits about automotive service. Prerequisites: None.

AUT203   **3 Credits**   **5 Periods**
Electrical Accessories
Theory and principles of wiring diagrams, accessories circuits, turn signals and warning systems. Circuit trouble-shooting and service of gauges, indicators, power windows and seats, deck latches and windshield wipers. Computerized electronic devices. Prerequisites: AUT103AA or permission of instructor.

AUT210   **3 Credits**   **3 Periods**
Auto Emission Systems
Automotive emissions control systems and methods of emissions measurement. Diagnostic practices as suggested by manufacturers and the related service of emissions control devices. Prerequisites: AUT103AA and AUT104AA or permission of instructor.

AUT233   **3 Credits**   **5 Periods**
Computerized Engine Control Systems
Presents the reasons for developing and using computerized engine control systems. Explores system operation, examining each component. Emphasizes diagnosis and repair of system faults. Prerequisites: AUT103AB and AUT104AA, or permission of instructor.

BIOLOGY (BIO)

BIO080AE   **4 Credits**   **6 Periods**
Basic Concepts of Introductory Biology for Allied Health
Corresponds to BIO156 Introductory Biology for Allied Health. Enrollment is recommended if student performance is inadequate in BIO156. Prerequisites: None.

BIO100   **4 Credits**   **6 Periods**
Biology Concepts
A one-semester introductory course covering basic principles and concepts of biology. Methods of scientific inquiry and behavior of matter and energy in biological systems are explored. Field trips may be required at students' expense. Prerequisites: None.

BIO105   **4 Credits**   **6 Periods**
Environmental Biology
Fundamentals of ecology and their relevance to human impact on natural ecosystems. Field trips may be required at students' expense. Prerequisites: None.

BIO106   **3 Credits**   **3 Periods**
Biotechnology & Society I
Introduction to biotechnology and its impact on society. Covers applications, limitations, benefits, risks, and legal and moral issues associated with biotechnology. Prerequisites: None.

BIO107   **4 Credits**   **6 Periods**
Introduction to Biotechnology
Introduction to biotechnology and its global impact on society. Covers applications, laboratory techniques, limitations and the international economic benefits, risks, and legal and moral issues associated with biotechnology. Prerequisites: None.

BIO145   **4 Credits**   **6 Periods**
Marine Biology
A survey of marine environments and their biotic communities with emphasis on the natural history of marine organisms. Prerequisites: None.

BIO156   **4 Credits**   **6 Periods**
Introductory Biology for Allied Health
An introductory biology course for allied health majors with an emphasis on humans. Topics include fundamental concepts of cell biology, histology, microbiology and genetics. Prerequisites: Grade of "C" or better in RDG091 or eligibility for CRE101 as indicated by appropriate reading placement test score. One year high school chemistry or one semester of college-level chemistry recommended.

BIO160   **4 Credits**   **6 Periods**
Introduction to Human Anatomy and Physiology
Principles of scientific method. Structural organization, homeostasis and control mechanisms of the body. Specific chemistry concepts. Structure and function of the major systems of the body. Prerequisites: None.

BIO162   **2 Credits**   **3 Periods**
Microbiology Concepts for Allied Health
Types of microorganisms. Principles of growth and reproduction for specific types of microorganisms. Chain of disease transmission and defense mechanisms. Use of compound microscope. Safe handling, and culturing of specific microbes. Methods of sterilization and use of disinfectants and chemotherapeutic agents. Prerequisites: None.

BIO181   **4 Credits**   **6 Periods**
General Biology (Majors) I
The study and principles of structure and function of organisms at the molecular and cellular levels. A detailed exploration of the chemistry of life, the cell, and genetics. Prerequisites: Grade of "C" or better in RDG091 or eligibility for CRE101 as indicated by appropriate reading placement test score. One year of high school or one semester of college-level biology and chemistry is strongly recommended.

BIO182   **4 Credits**   **6 Periods**
General Biology (Majors) II
The study and principles of structure and function of living things at cellular, organismic, and higher levels of organization. A detailed exploration of the mechanisms of evolution, biological diversity, biology of organisms, and ecology. Prerequisites: A grade of C or better in BIO181. Field trips may be required.

BIO201   **4 Credits**   **6 Periods**
Human Anatomy and Physiology I
Study of structure and function of the human body. Topics include cells, tissues, integumentary system, skeletal system, muscular system, and nervous system. Prerequisites: (BIO156 or BIO181 with a grade of "C" or better or one year of High School biology with a grade of "C" or better) and (a grade of "C" or better in RDG091 or eligibility for CRE101 as indicated by reading placement test score). CHM130 or higher or one year of High School chemistry suggested but not required.

BIO202   **4 Credits**   **6 Periods**
Human Anatomy and Physiology II
Continuation of structure and function of the human body. Topics include endocrine, circulatory, lymphatic, respiratory, digestive, urinary and reproductive systems; and fluid and electrolyte balance. Prerequisites: A grade of "C" or better in BIO201.

BIO205   **4 Credits**   **6 Periods**
Microbiology
Study of microorganisms and their relationship to health, ecology, and related fields. Prerequisites: (BIO156 or BIO181 with a grade of "C" or better or one year of High School biology with a grade of "C" or better) and (a grade of "C" or better in RDG091 or eligibility for CRE101 as indicated by reading placement test score). CHM130 or higher or one year of High School chemistry suggested but not required.

BIO211AA   **1 Credit**   **1 Period**
Biotechnology Seminar: Biomedical Applications
Special topics in biotechnology with an emphasis on current issues not covered in other life science courses. Prerequisites: None.

BIO211AB   **1 Credit**   **1 Period**
Biotechnology Seminar: Laboratory Protocol
Special topics in biotechnology with an emphasis on current issues not covered in other life science courses. Prerequisites: BIO211AA or permission of Instructor.

BIO211AE   **1 Credit**   **1 Period**
Biotechnology Seminar: Business and Regulatory Issues
Selected topics in biotechnology with an emphasis on current issues not covered in other life science courses. Prerequisites: None.

BIO212AB   **5 Credits**   **3 Periods**
Biotechnology II
Intensive introduction to biotechnology, including protein biochemistry, techniques for handling and purifying proteins, recombinant deoxyribonucleic acid (DNA), sequencing deoxyribonucleic acid (DNA), testing deoxyribonucleic acid (DNA) fragments for promoter activity and analysis of deoxyribonucleic acid (DNA) for open reading frames, promoters, and homology. Prerequisites: BIO212AA.

BIO212BA   **5 Credits**   **3 Periods**
Cell Biotechnology
Introduction to industrial laboratory biotechnology with intensive focus on the recovery of heterologous proteins from cultivated cells and the subsequent purification and characterization of these proteins. Prerequisites: ENG101 and ((BIO092 and BIO181) or BIO212AA).

BIO213   1 Credit   1 Period
BioSafety
General laboratory safety, hazardous chemical use and disposal, biohazardous material use and disposal, biosafety procedures, and radiation safety. Prerequisites: None.

BIO215   3 Credits   3 Periods
Biotechnology Internship
Internship experience in a biotechnology laboratory. Setting, achieving, and evaluating goals for hands-on learning experience in a biotechnology laboratory. Development of skills and knowledge needed to work in a biotechnology laboratory. Prerequisites: Permission of Program Director and (BIO212AA, or BIO212BA, or BIO208, or BIO209).

BIO247   4 Credits   3 Periods
Applied Biosciences: Biotechnology
Applies concepts of molecular and cellular biology of bacteria, animals, and plants to real-world problems. Prerequisites: A grade of "C" or better in BIO181. One semester of college- level chemistry or equivalent recommended.

BRICKLAYING (BKL)

BKL105   5 Credits   5 Periods
Basic Masonry Skills and Trade Calculations I
Bricklaying trade history, apprenticeship, jurisdiction, and employment opportunities. Basic hand tools and safety issues. Trade skills and masonry tools. Types, uses, handling, and properties of masonry materials. Trade calculations including linear measurement, area, and volume. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint Apprenticeship Training Committee or permission of the apprenticeship coordinator.

BKL115   5 Credits   5 Periods
Basic Masonry Skills and Trade Calculations II
Tools and equipment selection, use, maintenance and care. Measurement systems and trade calculations. Architectural drawings, schedules, and specifications. Specific construction plans and drawings. Wall construction, bricklaying assignments, and reinforced masonry. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint apprenticeship Training Committee or permission of the apprenticeship coordinator.

BKL205   5 Credits   5 Periods
Advanced Brick and Block Construction
General job site safety. Use of the metric system as it applies to bricklaying and masonry construction. Basic construction drawings. Numbers, symbols, abbreviations and names associated with bricklaying and masonry construction. Construction procedures and trade practices including walls, corners, arches, members, details, and combustible chambers. Moisture control. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint Apprenticeship Training Committee or permission of the apprenticeship coordinator.

BKL215   5 Credits   5 Periods
Blueprint Reading: Residential and Light Construction
Language and symbols of blueprint reading. Working drawings of brick veneer residential, light commercial, and light frame structures. Types of light frame construction and specifications for residential structure. Metric system adoption, effect on construction, and conversions for measurement and quantity. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint Apprenticeship Training Committee or permission of the apprenticeship coordinator.

BKL225   5 Credits   5 Periods
Blueprint Reading: Heavy Commercial
The building planning process. Blue print divisions, specifications, symbols, abbreviations, and interpretations. Building Specifications, legal requirements, materials, procedures, and quality control. Construction Specifications Institute (CSI) format and divisions. Estimating, project budgeting, and job completion. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint Apprenticeship Training Committee or permission of the apprenticeship coordinator.

BKL235   5 Credits   5 Periods
Masonry Estimating and Formal Bidding
Estimating techniques, quantities of labor, materials, and equipment. Masonry, concrete and reinforcing steel, and steel member costs. Contract development and formal bid processes. Prerequisites: Registered Apprentice status with the Phoenix Bricklaying and Tilesetting Joint Apprenticeship Training Committee or permission of the apprenticeship coordinator.

BUSINESS-PERSONAL COMPUTERS (BPC)

BPC100   2 Credits   2 Periods
Business-Personal Computers
Introduction to the use of personal computers in the business environment. Computer hardware components, operating system functions and concepts. Procedures for running and using business application software to produce documents and spreadsheets. Prerequisites: None.

BPC100AD   1 Credit   2 Periods
Computing Fundamentals
Fundamental computer concepts and terminology for business and personal computers. Prerequisites: None.

BPC100BD   1 Credit   1 Period
Key Software Applications
Covers basic features of software applications for business and personal computers. Prerequisites: None.

BPC100CD   1 Credit   1 Period
Living Online
Fundamental network and Internet concepts and terminology for business and personal computers. Covers basic features of electronic mail applications. Prerequisites: None.

BPC100DD   3 Credits   4 Periods
Internet and Computing Fundamentals
Fundamental computer and Internet concepts and terminology for business and personal computers. Covers basic features of software applications. Prerequisites: None

BPC101AA   1 Credit   2 Periods
Introduction to Computers I
Computer software applications for the personal computer including electronic spreadsheet and word processing, keyboarding review and a desktop environment. Prerequisites: None.

BPC106AH   0.5 Credit   0.5 Period
MS Outlook: Level I
Messaging and word processing functions of a Microsoft Outlook electronic work state. Prerequisites: None.

BPC110   3 Credits   4 Periods
Computer Usage and Applications
Introduction to business and personal computer operations and usage. Software applications for analyzing and solving business problems including word processing, spreadsheet, database, and presentation graphics. Prerequisites: None.

BPC130DK   1 Credit   2 Periods
Beginning Word
Using Word for Windows to create, edit, and print documents. Prerequisites: Ability to keyboard a minimum of 20 wpm or permission of instructor.

BPC131DK   1 Credit   1 Period
Intermediate Word
Intermediate concepts in using Word for Windows. Prerequisites: BPC130DK or permission of instructor.

BPC135DD   2 Credits   2 Periods
WordPerfect: Level I
Using WordPerfect word processing software to create and name files, edit text, format, and print a variety of documents. Prerequisites: The ability to use a keyboard at a minimum of 24 wpm or permission of Instructor.

BPC135DK   2 Credits   2 Periods
Word: Level I
Using Word word processing software to create and name files, edit text, format, and print a variety of documents. Prerequisites: None.

BPC170   3 Credits   4 Periods
Computer Maintenance I: A+ Essentials Prep
Technical aspects of the microcomputer, including system setup (hardware and software) and basic troubleshooting. Emphasis on basic troubleshooting, use of tools, hardware components and hardware/software interfacing. Prerequisites: CIS105, or permission of instructor.

BPC270   3 Credits   4 Periods
Computer Maintenance II: A+ Technician Prep
Advanced technical aspects of maintaining and servicing computers. Emphasis placed on installation, periodic maintenance, diagnosis, and/or problem resolution. Helps prepare students for the CompTIA A+ technician examinations including Information Technology (IT) field technician, remote support technician and bench technician. Prerequisites: BPC170 with grade of C or better, or permission of instructor.

CARPENTRY (CRP)

CRP102AA   1 Credit   1.5 Periods
Concrete Formwork: Building Layout
Laying out building lines and establishing elevations from a set of shop drawings. Use of transit level. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator

CRP102AB   1 Credit   1.5 Periods
Concrete Formwork: Residential Footing Form
Layout simple footing forms and starter walls with anchor bolts. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AC   1 Credit   1.5 Periods
Concrete Formwork: Footing Forms and Bolt Layout
Use of the transit level to measure in degrees and minutes on the vernier scale. Building footer forms and setting bolts in six geometric configurations as indicated on shop drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator. CRP102AA suggested, but not required.

CRP102AD   1 Credit   1.5 Periods
Concrete Formwork: Basic Wall Forms
Building a simple section of wall form using a standard whaler assembly; basic terminology pertaining to concrete wall form construction. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AG   1 Credit   1.5 Periods
Concrete Formwork: Spandrel Beam
Building the section of a spandrel form from shop drawings; basic terminology relating to spandrel beam forms. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AH   1 Credit   1.5 Periods
Concrete Formwork: Deck Forms and Shoring
Building a deck form from shop drawings; placing span-all shoring; basic terminology relating to deck forms and shoring. Prerequisites: Registered Apprentice Status and CRP102AG or permission of the apprenticeship coordinator.

CRP102AI   1 Credit   1.5 Periods
Concrete Formwork: Concrete Stair Forms
Building stair forms from shop drawings; basic terminology related to stair form construction. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AJ   1 Credit   1.5 Periods
Concrete Formwork: Tilt-up Construction I
Building a form for a tilt-up slab complete with all necessary inserts and block outs for openings. Prerequisites: Registered Apprentice Status and or permission of the apprenticeship coordinator.

CRP102AM   1 Credit   1.5 Periods
Concrete Formwork: Flatwork
Construction of slab forms including radius on grade level with the builder's level or transit. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AN   2 Credits   2 Periods
Concrete Formwork: Culverts, Headwall and Wingwalls
Box culvert design, form systems, areas, volumes and pressures. Culvert headwall, side walls and wingwall forms using a single and double whaler assembly. Concrete industry nomenclature. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AP   1 Credit   1.5 Periods
Concrete Formwork: Gang Forms
Building and plumbing a section of gang form using a standard whaler system complete with all the necessary components and hardware. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP103AA   1 Credit   1.5 Periods
Framing: Basic Wall Framing
Construction of a variety of different wall components including their layout and placement in a simple wall. Use of a framing square in constructing a rake wall. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP103AD   1 Credit   1.5 Periods
Framing: Floor Joist
Building a supporting section of floor complete with all the necessary components given a set of shop drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP103AE   1 Credit   1.5 Periods
Framing: Gable Roof
Using the framing square to layout common rafters of a variety of different roof slopes. Figuring the rafter lengths based on information given on the square. Building a section of roof from a given set of plans complete with barge board and all necessary roof framing components. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP102AF   1 Credit   1.5 Periods
Framing: Hip Roof
Framing a hip roof from a set of shop drawings complete with all the necessary framing components. Using the framing square to determine the length and the cuts of common, hip, and hip jack rafters. Prerequisites: Registered Apprentice Status and CRP103AE or permission of the apprenticeship coordinator.

CRP103AG   1 Credit   1.5 Periods
Framing: Intersecting Roof
Framing an intersecting roof from a set of shop drawings complete with all the necessary framing components. Using the framing square to determine the length and the cuts of common, hip, valley, hip jack, valley jack, and cripple jack rafters. Prerequisites: Registered Apprentice Status and CRP103AF or permission of the apprenticeship coordinator.

CRP103AI   1 Credit   1.5 Periods
Framing: Wood Stairs
Building a set of stairs consisting of two flights and a landing from a given set of working drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP103AJ   1 Credit   1.5 Periods
Framing: Framing Square
Tables, charts, and scales on the framing square; methods of determining brace lengths and angle cuts; step-off method of figuring rafter length; framing components that make up a variety of different roofs; decimal conversion; backing and lowering hip rafter; laying out a rafter given a slope and a span; conversion between pitch and slope; using a speed square. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP103AL   1 Credit   1.5 Periods
Framing: Advanced Framing Square Application
Building a geometric design consisting of a plate, two hip rafters, and one common rafter from a given set of drawings using the information on the framing square. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator. CRP103AF and CRP103AJ suggested but not required.

CRP104AE   1 Credit   1.5 Periods
Exterior Finish: Roof Coverings
Covering a small section of roof with three different types of roof coverings: composition shingles, cedar shingles, and shakes. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP105AA   1 Credit   1.5 Periods
Interior Finish: Standard Door Installation
Installation of a wooden door in a given opening. Fabrication and installation of the jamb and all trim components. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP105AC   1 Credit   1.5 Periods
Interior Finish: Running Trim
Building a small frame trimmed out with a variety of moldings according to a set of shop drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP105AG   1 Credit   1.5 Periods
Interior Finish: Door Hardware
Installation of door hardware including knob, latch, strike plate, hinge butts, and door closer. Prerequisites: Registered Apprentice Status and CRP105AA or permission of the apprenticeship coordinator.

CRP105AI   1 Credit   1.5 Periods
Interior Finish: Metal Partitions
Assembling metal partition unit complete with all panels and hardware. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP105AJ   1 Credit   1.5 Periods
Interior Finish: Soffit Panel
Building a soffit panel with trim and detailed projections as shown on a set of shop drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP106AA   1 Credit   1.5 Periods
Interior Systems: Metal Frame Walls
Tools, materials, components and erection procedures of metal frame walls and soffits as shown per shop drawings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP106AB   1 Credit   1.5 Periods
Interior Systems: Dry Wall Application
Tools, materials and installation procedures for dry wall application. Prerequisites: Registered Apprentice Status and CRP106AA or permission of the apprenticeship coordinator.

CRP106AH   1 Credit   1.5 Periods
Interior Systems: Dry Wall Estimation of Material
Reading and interpreting blueprints and shop drawings to estimate the amount of material needed for a dry wall project. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP106AK   1 Credit   1.5 Periods
Interior Systems: Suspended Lay-In Ceilings
Tools, materials, components, and erection procedures for suspended lay-in ceilings. Prerequisites: Registered Apprentice Status or permission of the apprenticeship coordinator.

CRP110AA   2 Credits   2 Periods
Introduction to Carpentry I: History and Tools
History, significance and benefits of labor unions. Successful and efficient labor relations. Carpentry in relation to other construction trades. Building trades organizations. Components of lumber. Hand and power tools used in carpentry. Prerequisites: Registered Apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP110AB   2 Credits   2 Periods
Introduction to Carpentry II: OSHA Safety
Safe and proper use of hand and power tools. Safe work habits, first aid, and cardiopulmonary resuscitation (CPR) according to Occupational Safety and Health Administration (OSHA) regulations. Prerequisites: Registered apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP112AA   2 Credits   2 Periods
Technical Calculations for Carpenters I
Integers and whole number processes: addition, subtraction, multiplication, division. Number types, factoring and cancellation. Mathematical functions using fractions, decimals, percentages. Prerequisites: Registered Apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP112AB   2 Credits   2 Periods
Technical Calculations for Carpenters II
Ratios and proportions. Use of plane and solid figure formula for the carpentry trade. Use of English and Metric systems of measurement for the carpentry trade. Graphs used for specific applications. Prerequisites: Registered apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP112AC   2 Credits   2 Periods
Advanced Calculations for Carpenters
Basic Algebraic skills and operations of fractions. Direct and inverse proportions. Exponential notations, negative integral exponents and formulas. Basic geometry, triangles, and the Pythagorean theorem. Bisecting lines, segments, and bisecting angles. Trigonometric tables and functions of angles. Sines and cosines. Vectors. Prerequisites: Registered apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP114AA   2 Credits   2 Periods
Blueprint Reading for Carpenters I
Types of blueprints and basic print reading. Symbols for materials. Construction details, standards, and specifications for brick veneer. Steel supports of plans for stores and apartments. Prerequisites: Registered Apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP114AB   2 Credits   2 Periods
Blueprint Reading for Carpenters II
Light frame construction. Specifications and standards used in plans for frame residence. Masonry and steel support roof components of plans for banks. Comprehensive study plans and construction specifications for restaurants. Prerequisites: Registered Apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP116AA   2 Credits   2 Periods
Concrete Formwork I
Construction and installation techniques. Building site and layout factors. Parts of forms and related hardware. Function of concrete form work in walls, columns, beams, decks and retaining walls. Wall forms and prefabricated walls. Residential foundations. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

CRP116AB   2 Credits   2 Periods
Concrete Formwork II
Construction and installation techniques. Elements of flatwork construction. Heavy construction and precast concrete techniques. Manufacture, mixing, quality control, placement, stripping, transportation, and curing of concrete. Prerequisites: CRP116AA.

CRP210AA   2 Credits   2 Periods
Basic Framing I
Construction and installation techniques. Floor framing and layout plate for posts and girders, joists, blocking, subfloor panels, underlayment, trusses, and hardware. Interior, exterior, prefabricated stairs. Wood framed wall: layout, bracing, fire block, corners, door and window openings. Flat roof and sloped ceilings: layout, framing, rafters, ceiling and stud joists. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

CRP210AB   2 Credits   2 Periods
Basic Framing II
Construction and installation techniques. Factors of weight, stress, tension, and compression. Truss connectors, bracing, and anchors. Gable, gambrel, hip, and shed roofs. Dormers. Intersecting roof. Roof trusses. Exterior deck. Fasteners, and connectors, and foundations. Prerequisites: CRP210AA.

CRP210AC   2 Credits   2 Periods
Commercial Framing I: Panelized Roof
Introduction to roof structure and codes. Materials, tools, layout, and tool safety. Fall protection. Blueprints and detail sheets. Installation, cutting, location of posts, beams, and nailers. Water proofing. Code requirements. Prerequisites: Registered apprenticeship status or permission of apprenticeship coordinator.

CRP212AA   2 Credits   2 Periods
Scaffolding for Carpenters
Occupational Safety and Health Administration (OSHA) regulations for system scaffolding. Terminology, assembly procedures, platform safety and access, and dismantling of scaffolding. Scaffolding framework to include braces, tie-ins, and guylines. Prerequisites: Registered apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP212AB   2 Credits   2 Periods
Level, Transit and Layout
Terminology. Types, parts, handling, set up, care, storage, transport, and use of leveling instruments. Leveling rods, leveling operations, vernier scales, linear and angular measurement. Conventional system of measurement. Builder's level and transit level. Simulated fieldwork exercises. Prerequisites: Registered apprentice status with the Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP212AC   2 Credits   2 Periods
Rigging
Occupational Safety and Health Administration (OSHA) rigging practices. American National Standards Institute and manufacturer guidelines. Slings, hardware, knots, hitches, splices. Hand and voice signals. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

CRP214AA   2 Credits   2 Periods
Interior Systems: Drywall
History, advantages, and applications of metal framing and drywall. Drywall products and metal framing components for interior partition work. Safe tool use and jobsite safety. Blueprints, specifications, and layout.   Standard and special metal framing for partitions. Drywall installation on metal framework. Suspended ceiling systems. Prerequisites: Registered Apprentice status with Central Arizona Carpenters Joint Apprenticeship Training Committee or permission of apprenticeship coordinator.

CRP214AC   2 Credits   2 Periods
Interior Finish: Door Installation and Hardware
Terms, tools, types of doors and door hardware. Installation procedures for doors and door hardware. Fabrication and installation of jam and trim components. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

CRP214AD   2 Credits   2 Periods
Cabinets and Tops
Fundamentals, terms, tools, safety. Types of wood and glue. Case construction: joints, layout, cutting, assembly. Hardware, plastic laminates, completed cabinets, completed tops. Installation procedures. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

CHEMISTRY (CHM)

CHM090   1 Credit   1 Period
Preparation for Fundamental Chemistry
A developmental course designed to review basic math and chemistry principles of students deficient or insecure in these areas. Stresses individualized instruction and "hands-on" experience. Serves to prepare the student for CHM130. Prerequisites: None.

CHM091   0.5 Credit   0.5 Period
Preparatory Chemistry
Review of basic concepts of chemistry emphasized in non-degree biology courses. Concepts of matter, energy, and chemical characteristics of atoms. Structure and function of inorganic and organic molecules. Prerequisites: None.

CHM130   3 Credits   3 Periods
Fundamental Chemistry
A survey of the fundamentals of general chemistry. Emphasis on essential concepts and problem solving techniques. Basic principles of measurement, chemical bonding, structure and reactions, nomenclature, and the chemistry of acids and bases. Preparation for students taking more advanced courses in chemistry. Designed to meet needs of students in such diverse areas as agriculture, nursing, home economics, physical education and water technology. Prerequisites: Grade of "C" or better in CHM090, or MAT090, or MAT091, or MAT092, or MAT093, or MAT102, or (MAT103AA and MAT103AB), or satisfactory score on math placement exam.

CHM130LL   1 Credit   3 Periods
Fundamental Chemistry Laboratory
Laboratory experience in support of CHM130. Prerequisites or Corequisites: CHM130.

CHM150   4 Credits   4 Periods
General Chemistry I
Detailed study of principles of chemistry for science majors and students in pre-professional curricula. Prerequisites: (CHM130 and CHM130LL), or (one year of high school chemistry with a grade of C or better taken within the last five years), and completion of intermediate algebra or equivalent. Completion of all prerequisites within the last two years is recommended. (Students may receive credit for only one of the following: CHM150 or CHM151.)

CHM151   3 Credits   3 Periods
General Chemistry I
Detailed study of principles of chemistry for science majors and students in pre-professional curricula. Prerequisites: (CHM130 and CHM130LL), or (one year of high school chemistry with a grade of C or better taken within the last five years), and completion of intermediate algebra or equivalent. Completion of all prerequisites within the last two years is recommended. (Students may receive credit for only one of the following: CHM150 or CHM151.)

CHM151LL   1 Credit   3 Periods
General Chemistry I Laboratory
Laboratory experience in support of CHM151. Prerequisites: CHM130LL or permission of instructor. Prerequisites or Corequisites: CHM150 or CHM151.

CHM152   3 Credits   3 Periods
General Chemistry II
A study of the chemical properties of the major groups of elements, equilibrium theory, thermodynamics, electrochemistry, and other selected topics. Completion of CHM152LL required to meet the Natural Science requirement. Prerequisites: CHM151 and CHM151LL. Completion of CHM151 and CHM151LL within the last two years recommended.

CHM152LL   1 Credit   3 Periods
General Chemistry II Laboratory
Laboratory experience in support of CHM152. Prerequisites: CHM151LL or permission of instructor. Prerequisites or Corequisites: CHM152.

CHM154   3 Credits   3 Periods
General Chemistry II with Qualitative
A study of the chemical properties of the major groups of elements, equilibrium theory, thermodynamics, kinetics, electrochemistry, and other selected topics. Includes qualitative analysis. Prepares students for all sophomore chemistry courses. Completion of CHM154LL required to meet the Natural Science requirement. Prerequisites: CHM151 and CHM151LL. Completion of CHM151 and CHM151LL within the last two years recommended.

CHM154LL   2 Credits   6 Periods
General Chemistry II Qualitative Laboratory
Laboratory experience in support of CHM154. Includes qualitative analysis. Prerequisites: CHM151LL or equivalent. Prerequisites or Corequisites: CHM154.

CHM230   3 Credits   3 Periods
Fundamental Organic Chemistry
Chemistry of representative groups of organic compounds, emphasizing biological applications. Prerequisites: (CHM130 and CHM130LL), or (CHM151 and CHM151LL). Completion of (CHM130 and CHM130LL) or (CHM151 and CHM151LL) within the last two years recommended. (Course content is designed to meet the needs of students in such areas as agriculture, home economics, nursing, pre-physician assistant, and physical education among others.)

CHM230LL   1 Credit   3 Periods
Fundamental Organic Chemistry Laboratory
Laboratory experience in support of CHM 230. Prerequisites: CHM130LL, or CHM151LL, or equivalent. Prerequisites or Corequisites: CHM230.

CHM260   3 Credits   3 Periods
Fundamental Biochemistry
Structures, properties, and functions of proteins, enzymes, nucleic acids, carbohydrates and lipids; the utilization and synthesis of these materials by living systems and the relationship of the processes to energy production and utilization. Designed for students in agriculture, dental hygiene, home economics, nursing, and physical therapy. Prerequisites: CHM230 and CHM230LL, or CHM236 and CHM236LL, or CHM238 and CHM238LL. Completion of CHM230 and CHM230LL, or CHM236 and CHM236LL, or CHM238 and CHM238LL within the last two years recommended.

CHM260LL   1 Credits   3 Periods
Fundamental Biochemistry Laboratory
Laboratory experience in support of CHM260. Prerequisites: CHM230 and CHM230LL or permission of Instructor. Corequisites: CHM260.

CISCO NETWORKING TECHNOLOGY (CNT)

CNT138   3 Credits   5 Periods
CCNA Discovery - Networking for Home and Small Businesses
Introduces skills for entry-level home network installer jobs including personal computer (PC) installation, Internet connectivity, wireless connectivity, file and print sharing, and the installation of peripherals. Provides introduction to networking and the Internet using tools and hardware from home and small business environments. Prerequisites: None.

CNT140   4 Credits   6 Periods
Cisco Networking Basics
Introduction to the computer networking field. Covers network terminology and protocols, local area networks (LAN), and wide area networks (WAN). Includes Open Systems Interconnection (OSI) models, cabling and cabling tools, routers, router programming, Ethernet, Internet Protocol (IP) addressing, and network standards. Preparation for the Cisco Certified Network Associate examination. Prerequisites: None.

CNT140AA   4 Credits   6 Periods
Cisco Networking Fundamentals
Introduction to the computer networking field. Covers network terminology and protocols, communication fundaments in Data networks and the Internet. Includes study of the Open Systems Interconnection (OSI) models, using a top down approach, cabling and cabling tools, basic Cisco routers, configuration, , Ethernet technologies, Internet Protocol (IP) addressing, and overview of Internet Protocol version 6 (IPv6), basic configuring and testing of the network, and network standards. Preparation for the Cisco Certified Network Associate (CCNA) examination. Prerequisites: None.

CNT145   4 Credits   5 Periods
Voice and Data Cabling
Development of knowledge and skills related to the physical aspects of voice and data network cabling and installation. Emphasis of the cabling industry and its worldwide standards, types of media and cabling, physical and logical networks, and signal transmission. Hands-on experience and skills to read network design documentation, part list set up and purchase, pulling and mounting cable, cable management, choosing wiring closets and patch panel installation and termination as well as installing jacks and cable testing. Use of diagnostic equipment, troubleshooting procedures, and documentation processes. Preparation for Building Industry Consulting Services International (BICSI) Registered Certified Installer, Level 1 exam. Prerequisites: CNT140 or permission of instructor.

CNT148   3 Credits   5 Periods
CCNA Discovery - Working at a Small-to-Medium Business or Internet Service Provider
Prepares students as network technicians. Develops skills for computer and help desk technicians including soft skills. Provides overview of routing, remote access, addressing, and security. Provides familiarity with e-mail, web, and authenticated access servers. Presents network monitoring and basic troubleshooting skills in context. Prerequisites: CNT138.

CNT150   4 Credits   6 Periods
Cisco Networking Router Technologies
Knowledge of skills to install, configure, customize, maintain and troubleshoot Cisco routers and components. Preparation for Cisco certification examination. Prerequisites: CNT140 or permission of instructor.

CNT150AA   4 Credits   6 Periods
Cisco Routing Protocols and Concepts
Knowledge of skills to install, configure, customize, maintain and troubleshoot Cisco routers utilizing Advanced Internet Protocol (IP) addressing techniques, Variable Length Subnet Masking (VLSM), distance vectored and Link State dynamic routing protocols, Routing Internet Protocol version 1 (RIPv1) and version 2 (RIPv2), Enhanced Interior Gateway Routing Protocol (EIGRP), Single-area Open Shortest Path First (OSPF), and understanding the structure and behavior of routing tables. Preparation for Cisco certification examination. Prerequisites: CNT140 or permission of instructor.

CNT158   4 Credits   6 Periods
CCNA Discovery - Introduction to Routing and Switching in the Enterprise
Familiarizes students with the equipment, applications and protocols installed in enterprise networks, with a focus on switched networks, Internet Protocol (IP) Telephony requirements, and security. Introduces advanced routing protocols such as Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF) Protocol. Hands- on exercises include configuration, installation, and troubleshooting. Prerequisites: CNT148.

CNT160   3 Credits   4 Periods
Cisco Switching Basics and Intermediate Routing
Advanced Internet Protocol (IP) addressing techniques, Variable Length Subnet Masking (VLSM), Intermediate routing protocols, Routing Internet Protocol version 2 (RIPv2), Single-area Open Shortest Path First (OSPF), and Enhanced Interior Gateway Routing Protocol (EIGRP), Command Line Interface configuration of switches, Ethernet switching, Virtual Local Area Networks (VLANS), Spanning Tree Protocol (STP) and Virtual local-area Network Trunking Protocol (VTP). Preparation for Cisco Certified Network Associate certification examination. Prerequisites: CNT150 or permission of instructor.

CNT160AA   4 Credits   6 Periods
Cisco Local Area Networking (LAN) Switching and Wireless
Comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. Learn about the hierarchical network design model and how to select devices for each layer. Configure a switch for basic functionality and implement Virtual Local Area Networks (VLAN), VLAN Trunking Protocol (VTP), and Inter-VLAN routing in a converged network. Implementation of Spanning Tree Protocol (STP) in a converged network and a Wireless LAN (WLAN) in a small to medium network. Comprehensive hands-on labs. Preparation for Cisco certification examination. Prerequisites: CNT140AA or permission of Instructor.

CNT168   4 Credits   6 Periods
CCNA Discovery - Designing and Supporting Computer Networks
Networking design and customer support including gathering requirements, designing basic networks, establishing proof- of-concept, and performing project management tasks. Lifecycle services, including upgrades, competitive analyses, and system integration, in the context of pre-sale support. Prerequisites: CNT158.

CNT170   3 Credits   4 Periods
Cisco Wide Area Networks (WAN) Technologies
Advanced Internet Protocol (IP) addressing techniques including Network Address Translation (NAT) Port Address Translation (PAT) and Dynamic Host Control Protocol (DHCP). Also covers Wide Area Network (WAN) technology and terminology, Point-to-Point Protocol (PPP), Integrated Services Digital Network (ISDN), Dial on Demand Routing (DDR), Frame Relay, and network management. Preparation for Cisco Certified Network Associate certification examination. Prerequisites: CNT160 or permission of instructor.

CNT170AA   4 Credits   6 Periods
Cisco Accessing the Wide-Area Network (WAN)
Wide-Area Network (WAN) technologies and network services required by converged applications in Enterprise Networks. Cisco Enterprise Composite model (ECM) to introduce integrated network services and selection of appropriate devices and technologies to meet ECM requirements. Implement and configure common data link protocols and apply WAN security concepts, principles of traffic management, access control and addressing services. Detect, troubleshoot, and correct common enterprise network implementation issues. Includes comprehensive hands-on labs. Preparation for Cisco certification examination. Prerequisites: (CNT140AA, CNT150AA, and CNT160AA), or permission of Instructor.

CNT181   4 Credits   5 Periods
Cisco Securing IOS Networks
Applications of Cisco Networking technologies in designing and implementing security solutions to reduce risk of revenue loss and vulnerability. Hands-on experience and skills in security policy design and management, security technologies, products and solutions, secure router installation, configuration, and maintenance, AAA (Authentication, Authorization, and Accounting), and VPN (Virtual Private Network) implementation using routers. Preparation for the Securing Cisco IOS Networks (SECUR) exam, which applies toward the Cisco Certified Security Professional (CCSP), Virtual Private Network (VPN) Specialist, Intrusion Detection System (IDS) Specialist and the Firewall Specialist certifications. Prerequisites: CNT170 or permission of instructor.

CNT182   4 Credits   5 Periods
Cisco Secure PIX Firewall Configuration
Applications of Cisco Networking technologies in designing and implementing security solutions to reduce risk of revenue loss and vulnerability. Hands-on experience and skills in security policy design and management, security technologies, products and solutions, secure firewall design, installation, configuration and maintenance, Authentication, Authorization, and Accounting (AAA), Failover, and Virtual Private Network (VPN) implementation using firewalls. Prerequisites: CNT170 or permission of instructor.

CNT183   3 Credits   4 Periods
Cisco Secure Virtual Private Network Configuration
Knowledge and skills needed to describe, configure, verify and manage the Cisco Virtual Private Network (VPN) concentrator, Cisco Virtual Private Network (VPN) software client, and Cisco Virtual Private Network (VPN). Hardware Client Feature set. Prerequisites: CNT181 or permission of instructor.

CNT185   4 Credits   5 Periods
Cisco Network Security
Applications of Cisco Networking technologies in designing and implementing security solutions to reduce risk of revenue loss and vulnerability. Hands-on experience and skills in security policy design and management, security technologies, products and solutions, firewall and secure router design, installation, configuration and maintenance, AAA (Authentication, Authorization, and Accounting) and VPN (Virtual Private Network) implementation using firewalls and routers. Preparation for the MCNS (Managing Cisco Network Security) and CSPFA (Cisco Secure PIX Firewall Advanced) exams toward certification as a Cisco Firewall Specialist. Exams also apply to CCSP (Cisco Certified Security Professional) certification. Prerequisites: CNT170, or permission of instructor.

CNT186   4 Credits   5 Periods
Fundamentals of Wireless LANs
Design, planning, implementation, operation, and troubleshooting of wireless networks. Overview of technologies, security, and design best practices with emphasis on hands-on skills in wireless LAN (local area network) setup and troubleshooting, 802.11a & 802.11b technologies, products and solutions, site surveys, resilient WLAN design, installation and configuration, WLAN Security - 802.1x, EAP (Extensible Authentication Protocol), LEAP (Light Extensible Authentication Protocol), WEP (Wired Equivalent Privacy), SSID (Service Set Identifier), and vendor interoperability strategies. Prepare students to earn Cisco Wireless LAN Support Specialist designation and to take the Certified Wireless Network Administrator (CWNA) exam. Prerequisites: CNT170, or permission of instructor.

CNT190   3 Credits   4 Periods
Cisco Network Design
Development of knowledge and skills required to design small- to-midsize local and wide-area networks according to design principals developed by Cisco Systems. Preparation for Cisco Certified Design Associate (CCDA) industry examination. Prerequisites: CNT170, or Cisco Certified Network Associate certification, or permission of instructor.

CNT200   4 Credits   6 Periods
CCNP: Building Scalable Cisco Internetworks (BSCI)
Development of knowledge and skills needed to manage Internet Protocol (IP) traffic and access, understand scalable internetworks and Quality of Service (QoS), configure advanced routing protocols, Border Gateway Protocol [BGP], Intermediate System to Intermediate System [IS-IS], Enhanced Interior Gateway Routing Protocol [EIGRP], Open Shortest Path First [OSPF]), as well as multicast routing, Internet Protocol (IPv6), and perform advanced IP addressing configuration, (Dynamic Host Configuration Protocol (DHCP)). Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170 or CCNA industry certification, or permission of instructor. Corequisites: CNT210 and CNT220.

CNT210   4 Credits   6 Periods
Cisco CCNP II: Implementing Secure Converged Wide Area Networks
Development of knowledge and skills in implementing secure enterprise-class network service for teleworkers and branch sites. Students will learn how to secure and expand the reach of an enterprise network with focus on VPN configuration and securing network access. Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170, or CCNA industry certification, or permission of instructor. Corequisites: CNT200 and CNT220.

CNT220   4 Credits   6 Periods
Cisco CCNP: Building Multilayer Switched Networks
Development of knowledge and skills in building campus networks using advanced and multi-layer switching technologies. Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170 or CCNA industry certification, or permission of instructor. Corequisites: CNT200 and CNT210.

CNT230   4 Credits   6 Periods
Cisco CCNP IV: Optimizing Converged Networks
Introduction to optimizing and providing effective Quality of Service (QoS) techniques in converged networks operating voice, wireless and security applications. Topics include implementing a Voice over Internet Protocol (VoIP) network, implementing QoS on converged networks, specific Internet Protocol (IP) QoS mechanisms for implementing the DiffServ QoS model, AutoQ0S, wireless security and basic wireless management. Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170 or CNT170AA or CCNA industry certification, or permission of instructor. CNT200, CNT210, and CNT220 suggested but not required.

CLINICAL RESEARCH ASSOCIATE (CRA)

CRA290   3 Credits   3 Periods
Introduction to Clinical Research Associate
Introduction to the Clinical Research Associate (CRA) profession as an advanced career path for clinical research coordinators. Topics include CRA role, career development, study development process, monitoring, training and oversight, and regulations. Effective analysis, synthesis, and evaluation of topics through written discourse. Prerequisites: (Completion of the certificate of completion in Clinical Research Coordinating) or (two [2] years of clinical research work experience) or (certification as a clinical research coordinator) or (Bachelor [or higher] degree in life or health sciences) or permission of department or division.

CRA291   4 Credits   4 Periods
Monitoring
Basic monitoring skills and responsibilities required of the Clinical Research Associate (CRA). site selection and Initiation, routine monitoring and close-out visits; audit techniques and preparations; expectations and professionalism; monitoring plans, Standard Operating Procedure (SOP) adherence, training of sites, travel expectations and conduct; sponsor interactions (acting as a liaison); source document verification; review of patient charts; use of electronic systems; monitoring reports and letters; adverse event monitoring and reporting; recruitment and retention. Prerequisites: CRA290.

CRA293   3 Credits   3 Periods
Clinical Study Development
Introduction to the Clinical Study Development Process and various roles of a Clinical Research Associate (CRA). Roles and responsibilities of in-house CRA versus Field CRA support, timelines of Clinical Study Development, overview of the ABC model, drug versus device study development and national and international considerations. Prerequisites: CRA290.

CRA295   3 Credits   3 Periods
Ethics and Regulations
Overview of the regulations, guidelines and resources associated with the Clinical Research Associate (CRA) role. Monitoring responsibilities, Code of Federal Regulations, International Conference of Harmonisation (ICH) guidelines, European Directives, Pharmaceutical Research and Manufacturers of America (PhRMA) principles, Food and Drug Administration (FDA) Guidelines for the Monitoring of Clinical Investigations and sponsor responsibilities for conduct of clinical trials and approval. Prerequisites: CRA290.

CRA297   3 Credits   3 Periods
Clinical Trial Material and Device Accountability
Overview of Clinical Trial Material (CTM) from development and manufacturing to accountability and destruction along with comparable device processes. Roles of a Clinical Research Associate (CRA) relative to Clinical Trial Materials/Devices. Investigational New Drug (IND) applications, good manufacturing practices, importing and exporting of CTMs/devices, packaging and stability, accountability records, destruction requirements and review of regulatory considerations. Prerequisites: CRA290.

CLINICAL RESEARCH COORDINATING (CRC)

CRC101   2 Credits   2 Periods
Introduction and Overview of Cancer Disease
Introduction and overview of the disease and treatment of cancer including cancer origin, development, pathology, staging, hematopoiesis, epidemiology, diagnosis modalities, treatment options, cancer research and differentiation of solid tumors versus nonsolid tumors. Effective analysis, synthesis, and evaluation of topics through written discourse. Prerequisites: Health care professional, or permission of department or division.

CRC120   4 Credits   4 Periods
Introduction to Clinical Research
Introduction to the clinical research process. History, development and basic study designs in varied health, biomedical and biotechnical settings. Clinical trial development phases and regulatory protection for human subjects. Roles and responsibilities of the clinical research team and research organization. Good Clinical Practice (GCP) and International Committee on Harmonization (ICH) guidelines. Functions, research terminology, and general research funding of the Institutional Review Board (IRB) and Ethics Review Committee. Prerequisites: None.

CRC200   4 Credits   4 Periods
Legal and Regulatory Research Compliance
Overview of legal and regulatory research compliance. Federal and international regulations, Good Clinical Practice and International Council on Harmonization guidelines. Roles, responsibilities and related regulations of Institutional Review Boards, Data Monitoring Committees and research organizations. Required forms, human subject protection, research integrity, ethical considerations, Health Insurance Portability and Accountability Act (HIPAA) and conflict of interest issues. Prerequisites: CRC120.

CRC210   4 Credits   4 Periods
Research Design and Data Management
Major research design methodologies and data management. Interpretation of research design, organization of study charts and data, participant eligibility, and maintenance of screening/visit logs. Submission of adverse event forms. Overview of database structures, electronic data collection methods, and effective presentation of data in required reports and publications. Tracking of investigational agents and preparation for audits and site visits by sponsors and/or regulators. Prerequisites: CRC120.

CRC215   0.5 Credit   0.5 Period
Clinical Research Update
Clinical research coordinating update for the enhancement and reinforcement of specific clinical research team member skills and knowledge for employment in the clinical research arena. Current field topics, issues, regulatory updates and industry operational trends. Prerequisites: Enrollment in the Clinical Research Coordinating program or presently working in clinical research arena. May be repeated for a total of 10 credits.

CRC220   3 Credits   3 Periods
Basic Genetics and Clinical Research
Preparation of clinical research team members in the field of genetic testing research studies. Genetic research complexities and special subject circumstances. Overview of Mendlian genetics, molecular biology and the Human Genome Project. Focus on projected state of genetic testing, the discipline of genetic counseling, ethical and legal dilemmas. Includes genetic pharmacology, Deoxyribonucleic Acid (DNA) chip technology, complexities of genotype-phenotype studies, the relationship between genetics and behavior, individual rights regarding genetic information, informed consent issues and standards for protecting privacy and using children in genetic research projects. Prerequisites: Currently enrolled in the Clinical Research Coordinating (CRC) program or other college healthcare discipline, or currently licensed and/or degreed in nursing or allied health, or currently employed in the clinical research arena as a clinical research coordinator, or part of a clinical research team, or acceptance of CRC program coordinator.

CRC225   2 Credits   2 Periods
Clinical Research Site Budget Process
Clinical research site study budget process including line item budgeting, per subject costs, study start up, overhead costs, negotiations and timelines. Prerequisites: (Certified or licensed in a healthcare profession) or (experience in healthcare or research).

CRC230   1 Credit   5 Periods
Clinical Research Coordinator Independent Study
Observation and application of clinical research coordinator skills and functions in various clinical research settings. Eighty (80) hours of clinical research coordinator experience in a clinical research setting. Prerequisites: Acceptance into Clinical Research Coordinating program and completion of CRC120. CRC230 may be repeated for a total of three (3) credits.

CRC235   2 Credits   2 Periods
Introduction to Oriental Medicine and Research
Introduction, overview and basic history of Oriental Medicine with an emphasis on Western medicine interactions with Chinese herbs and clinical research. Prerequisites: None.

CRC240   3 Credits   3 Periods
Research Ethics
History of human experimentation and bioethics. Fundamentals of ethical principles including autonomy, beneficence, nonmaleficence and justice. Practical application of moral sensitivity, moral reasoning, moral commitment and perseverance, and moral implementation. Overview of ethical issues arising from biomedical research including informed consent, vulnerable populations, using children and animals for research, and placebos and sham surgery in research. Includes Institutional Review Board (IRB's), conflict of interest, plagiarism and data fabrication. Prerequisites: (Certified or licensed in a healthcare profession) or (experience in healthcare or research).

CRC250   4 Credits   4 Periods
Clinical Research Site Management
Clinical research site organization, operation and management. Grants, office setup, study initiation process, documentation requirements and binders, and site evaluation. Budget and contract negotiation, business marketing, and sponsor and regulatory audit components and preparation. Coordination with sponsors and related research entities. Organization of process flow and effective interactions with Institutional Review Boards, Contract Research Organizations, sponsors, regulators, investigators, and community. Prerequisites: CRC120.

CRC255   2 Credits   2 Periods
Introduction to Medical Devices in Clinical Evaluation
Introduction to the role of the Clinical Research Coordinator (CRC) in medical device research. Overview of medical device regulatory requirements, the role of the Institutional Review Board (IRB), and classification of medical devices including Humanitarian Device Exemptions. Special emphasis on conduct of an investigational study and roles of the investigator, CRC, and the IRB. Prerequisites: CRC120 or permission of Clinical Research Coordinating Program Director.

CRC260   3 Credits   3 Periods
Clinical Evaluation of Medical Devices
Overview of the medical device research world with a focus on key concepts related to product development and the regulated environment. Roles and responsibilities within the industry. Clinical research design considerations for protocol creation, patient safety and the adherence to the Food and Drug Administration (FDA) regulations. Good Clinical Practice, Good manufacturing Practices, global product safety and current guidelines, and identification of regulatory requirements. Overview of the European Medical Device Directive 93/42/EEC (MDD), European Union (EU) conformity assessments, and EU essential requirements. Prerequisites: (CRC120 and current enrollment in, or previous completion of, the Clinical Research Coordinating program or other healthcare program at GWCC), or (CRC120 and current employment in the clinical research arena as a clinical research coordinator or part of a clinical research team, or permission of Clinical Research Coordinating program coordinator).

CRC270   3 Credits   3 Periods
Institutional Review Board in Clinical Research
Examines the historical development, regulatory roles, responsibilities and functions of Institutional Review Board (IRB) membership and related stakeholder relationships. Comparisons of different IRB organizational and operational designs in relation to emerging technologies and implications for future research will be reviewed. Special emphasis on developing an understanding of the complexity of IRB roles, the implementation of state, national and international regulations and guidelines, and potential conflicts associated with the conduct of human research. Includes IRB functions, related regulations, ethical issues, current and future operational trends. Prerequisites: (Certified or licensed in a healthcare profession) or (experience in healthcare or research).

CRC285   3 Credits   3 Periods
Introduction to Oncology Research
Introduction and overview of oncology research including Phase I – IV study design, pre-study evaluation criteria, protocol and consent form design, and adverse event reporting criteria. Effective analysis, synthesis, and evaluation of topics through written discourse. Prerequisites: (NCE/CRC101 and one (1) year of oncology clinical research), or permission of department or division.

COMMUNICATION (COM)

COM100   3 Credits   3 Periods
Introduction to Human Communication
Theory and practice of communication skills in public, small group, and interpersonal settings. Includes study of the speech communication process. Prerequisites: None.

COM110   3 Credits   3 Periods
Interpersonal Communication
Theory and practice of communication skills which affect day-to-day interactions with other persons. Topics may include using verbal and nonverbal symbols, interactive listening, resolving interpersonal conflict, developing and maintaining personal and professional relationships. Prerequisites: None.

COM120   3 Credits   3 Periods
Pronunciation of American Speech
Analysis of American speech production problems due to accents produced by another language, correction of misarticulated American speech sounds, critical listening to sound production, understanding American English speech patterns, practicing American idioms and expressions, and preparing and delivering group and individual speech presentations. Prerequisites: None.

COM225   3 Credits   3 Periods
Public Speaking
Designed to enhance the student's ability to present public speeches confidently and competently. Also designed to improve information literacy and critical thinking skills. Prerequisites: ENG101, or ENG107, or equivalent.

COM230   3 Credits   3 Periods
Small Group Communication
Principles and processes of small groups and development of skills for participation and leadership in small group settings. Practice in problem solving, decision making, and information sharing. Prerequisites: None.

COM259   3 Credits   3 Periods
Communication in Business and Professions
Interpersonal, group, and public communication in business and professional organizations. Emphasis on oral communication. Prerequisites: ENG101, or ENG107, or equivalent.

COM263   3 Credits   3 Periods
Elements of Intercultural Communication
Basic concepts, principles, and skills for improving oral communication between persons from different minority, racial, ethnic, and cultural backgrounds. Prerequisites: None.

COMPUTER INFORMATION SYSTEMS (CIS)

CIS100   0.5 Credit   0.5 Period
Internet: A Tool for Learning
Use of the Internet to promote learning. Focus on Internet services and access. Information provided on browsing, Internet addresses, naming conventions, search concepts and techniques, using bookmarks and capturing information. Prerequisites: None.

CIS102   1 Credit   1 Period
Interpersonal and Customer Service Skills for IT Professionals
Examines behaviors necessary to develop and support an effective client service organization. Focuses on methods of increasing the effectiveness of help-desk professionals when responding to a range of customer conditions. Prerequisites: None.

CIS105   3 Credits   4 Periods
Survey of Computer Information Systems
Overview of computer technology, concepts, terminology, and the role of computers in society. Discussion of social and ethical issues related to computers. Use of word processing, spreadsheet, database, and presentation software. Includes programming and use of the Internet. Exploration of relevant emerging technologies. Prerequisites: None.

CIS107   3 Credits   4 Periods
The Electronic Game Industry
Introduction to the electronic game industry, including history, market, distribution and publishing channels, business models, team roles, and career landscape. Technical topics covered include software engineering, artificial intelligence, game physics, computer graphics, and networking. Prerequisites: CIS105, or permission of instructor.

CIS108   1 Credit   2 Periods
Electronic Portfolio Development
Compile, reflect on, and select prior learning experiences and artifacts. Design, produce, and publish an online portfolio that documents prior learning. Includes techniques for presenting the electronic portfolio for evaluation. Prerequisites: (CIS105 or BPC110), or permission of instructor.

CIS114AE   1 Credit   2 Periods
Excel: Level I
Computer spreadsheet skills for solving business problems using Excel, including calculations, forecasting, and projections. Prerequisites: None.

CIS114BE   1 Credit   2 Periods
Excel: Level II
Additional Excel spreadsheet techniques, including macro programming, database searching, extraction, and linking to obtain prescribed reports and graphs. Prerequisites: CIS114AE or permission of instructor.

CIS114CE   1 Credit   1 Period
Excel: Level III
Additional Excel spreadsheet techniques, including complex macros, statistics, and matrix manipulation. Project design using multiple, integrated spreadsheets. Prerequisites: CIS114BE or permission of instructor.

CIS114DE   3 Credits   5 Periods
Excel Spreadsheet
Computer spreadsheet skills for solving business problems using Excel, including calculations, forecasting, projections, macro programming, database searching, extraction, linking, statistics, and matrix manipulation. Production of graphs and reports. Project design using multiple, integrated spreadsheets. Prerequisites: None.

CIS117AM   1 Credit   2 Periods
Database Management: Microsoft Access - Level I
Introduction to the basic elements of a current version of the Microsoft Access database management program, for casual and beginning users. Prerequisites: None.

CIS117BM   1 Credit   2 Periods
Database Management: Microsoft Access - Level II
Exploration of additional components of the Microsoft Access database management program. Prerequisites: CIS117AM or permission of Instructor.

CIS117CM   1 Credit   1 Period
Database Management: Microsoft Access - Level III
Application of the features of the Microsoft Access program to some common database management problems. Prerequisites: CIS117BM.

CIS117DM   3 Credits   5 Periods
Microsoft Access: Database Management
Introduction to the basic elements, exploration of additional components and common database management problems related to the Microsoft Access program. Combines the contents of CIS117AM and CIS117BM and CIS117CM. Prerequisites: None.

CIS118AB   1 Credit   2 Periods
PowerPoint: Level I
Use of PowerPoint software to produce professional-quality presentation visuals. Prerequisites: None.

CIS118BB   1 Credit   2 Periods
PowerPoint: Level II
Use of PowerPoint software add movement and sound to desktop presentations to enhance audience attention. Prerequisites: CIS118AB.

CIS118CB   1 Credit   1 Period
PowerPoint: Level III
Use of PowerPoint software for advanced desktop presentation techniques, including advanced animation and sound sequences. Prerequisites: CIS118BB.

CIS120AF   1 Credit   2 Periods
Computer Graphics: Adobe Photoshop: Level I
Provides students with the capability to use Adobe Photoshop graphics software on a computer. Basic foundation course in the use of electronic techniques to select, manipulate, and edit images, for graphic design and image correction. Prerequisites: None.

CIS120AJ   1 Credit   2 Periods
Introduction to Digital Photo Editing
Introduction to digital photography and image editing. Digital photo editing use of electronic techniques to select, manipulate, and edit images. Prerequisites: None.

CIS120BF   1 Credit   1 Period
Computer Graphics: Adobe Photoshop: Level II
Provides students with the capability to use Adobe Photoshop graphics software on a computer. Includes working with masks, channels and layers, and combining raster and vector graphics. Prerequisites: CIS120AF.

CIS120CF   1 Credit   1 Period
Computer Graphics: Adobe Photoshop: Level III
Provides students with the capability to use Adobe Photoshop graphics software on a computer. Includes color printing, color management, creation of graphics for the Web. Prerequisites: CIS120BF.

CIS120DB   3 Credits   4 Periods
Computer Graphics: Adobe Illustrator
Provides students with the capability to use Adobe Illustrator graphics software on a computer. Basic foundation course in the use of electronic techniques to create, manipulate, and edit images, text, abstract art, graphics design, color graphics and business charts; determine file formats appropriate for web and print; utilize tools to optimize graphics and create a PDF file. Prerequisites: None.

CIS120DC   3 Credits   4 Periods
Flash: Digital Animation
Provides students with the ability to use Flash graphics software on microcomputers. Covers basic animation techniques used in the creation, manipulation, and editing of Flash animation graphics. Prerequisites: None.

CIS120DF   3 Credits   4 Periods
Computer Graphics: Adobe Photoshop
Provides students with the capability to use Adobe Photoshop graphics software on a computer. Basic foundation course in the use of electronic techniques to select, manipulate, and edit images, work with masks, channels and layers; combine raster and vector graphics; print in color, manage color, and create graphics for the web. Prerequisites: None.

CIS120DG   3 Credits   4 Periods
Fireworks: Web Graphics
Use of graphics software to create and edit vector and bitmap (raster) graphics. Creation and manipulation of paths and special effects. Covers slices, buttons, pop-up menus, navigation bars, and animations for use in web sites. Prerequisites: None.

CIS121AB   1 Credit   2 Periods
Microsoft Command Line Operation
Use of the Microsoft command line interface: basic concepts, internal and external commands, subdirectories, and editor. Prerequisites: None.

CIS121AE   1 Credit   2 Periods
Windows Operating System: Level I
Specific topics include Windows basics, navigating and customizing the desktop, maintaining hardware and software, improving performance, configurations, securing your computer, taskbar, organizing, searching and managing folders and files, installing and uninstalling applications, Internet Explorer fine tuning, security, and searching, including advanced search techniques, keyboard shortcuts, and current topics. Prerequisites: None.

CIS126AA   1 Credit   2 Periods
UNIX Operating System: Level I
Use of the UNIX operating system: system components, built-in commands, files and directories, editors, and UNIX Shell and command lines. Prerequisites: None.

CIS126AL   1 Credit   2 Periods
Linux Operating System I
Introduction to the Linux Operating system. Develop knowledge and skills required to install, configure a Linux-based workstation including basic network functions. Prerequisites: None.

CIS126BA   1 Credit   1 Period
UNIX Operating System: Level II
Installation, configuration, and maintenance of the UNIX operating system. Prerequisites: CIS126AA.

CIS126BL   1 Credit   1 Period
Linux Operating System II
Introduction to the Linux Operating system. Develop knowledge and skills required to configure a Linux-based workstation including basic printing functions. Learn basic command line and Graphical User Interface (GUI) desktop environment utilities and applications. Prerequisites: CIS126AL or permission of instructor.

CIS126CA   1 Credit   1 Period
UNIX Operating System: Level III
Create login scripts and batch files, and maintain system communications. Prerequisites: CIS126BA.

CIS126CL   1 Credit   1 Period
Linux Operating System III
Introduction to the Linux Operating system. Develop knowledge and skills required to install and configure applications, and to troubleshoot a Linux-based workstation including basic network functions. Learn basic command line and Graphical User Interface (GUI) desktop environment utilities and applications. Prerequisites: CIS126BL or Permission of Instructor

CIS126DA   3 Credits   4 Periods
UNIX Operating System
Use of a UNIX operating system including system components, built-in commands, files, and directories, editors, and UNIX shell and command lines. Installation, configuration, and maintenance of a UNIX operating system. Create scripts and batch files, and maintain system communications. Prerequisites: None.

CIS126DL   3 Credits   4 Periods
Linux Operating System
Introduction to the Linux Operating system. Develop knowledge and skills required to install, configure and troubleshoot a Linux-based workstation including basic network functions. Learn basic command line and Graphical User Interface (GUI) desktop environment utilities and applications. Fundamental abilities to achieve the entry-level industry certification covered. Prerequisites: None.

CIS128   3 Credits   4 Periods
Databases in Practice Management
Use of a Practice Management Database (Electronic Health Record software) for installation and maintenance of an Electronic Health Record. Application of policies and procedures for data control, security, privacy, and confidentiality of health information in electronic health information management systems. Prerequisites: None.

CIS130DA   3 Credits   4 Periods
3D Studio Max: Modeling
Introduction to 3D modeling using 3D Studio Max. Emphasis will be placed on Polygonal, Solid, and Surface modeling tools. Students will also understand concepts such as modifiers, sub-object editing, extruding, Booleans, lofting, lathing and compound object modeling. Introduction to basic lighting, texturing and rendering techniques. Prerequisites: CIS105.

CIS130DB   3 Credits   4 Periods
3D Studio Max: Animation
Introduction to three-dimensional animation tools and principles, with an emphasis on character construction and animation. 3D Studio Max will be the primary application for use in this class. Prerequisites: CIS105.

CIS133AA   1 Credit   2 Periods
Internet/Web Development Level I-A
Overview of the Internet and its resources. Hands-on experience with various Internet communication tools. Prerequisites: None.

CIS133DA   3 Credits   4 Periods
Internet/Web Development Level I
Overview of the Internet/WWW and its resources. Hands-on experience with various Internet/WWW communication, resource discovery, and information retrieval tools. Web page development also included. Prerequisites: None.

CIS150   3 Credits   4 Periods
Programming Fundamentals
Structured program design and logic tools. Use of computer problems to demonstrate and teach concepts using appropriate programming language. Prerequisites: CIS105, or permission of instructor.

CIS150AB   3 Credits   4 Periods
Object-Oriented Programming Fundamentals
Structured and Object-Oriented design and logic tools. Use of computer problems to demonstrate and teach concepts using an appropriate programming language. Prerequisites: CIS105 or permission of instructor.

CIS151   3 Credits   4 Periods
Computer Game Development -Level I
Introduction to object-oriented game development, game design, and game theory. Use of computer software to demonstrate and teach concepts using an appropriate game development platform to model real-time simulations and create computer games using object oriented tools. Introduction to developing PC games, educational software, and training software using windows based object oriented developments tools. Prerequisite: CIS105 or permission of instructor

CIS159   3 Credits   4 Periods
Visual Basic Programming I
Use of the Visual Basic programming language to solve problems using suitable examples from business or other disciplines. Prerequisites: CIS105 or permission of instructor.

CIS162AB   3 Credits   4 Periods
C++: Level I
Introduction to C++ programming including general concepts, program design, development, data types, operators, expressions, flow control, functions, classes, input and output operations, debugging, structured programming, and object-oriented programming. Prerequisites: CIS105, or permission of instructor.

CIS162AD   3 Credits   4 Periods
C#: Level I
Introduction to C# programming including general concepts, program design, development, data types, operators, expressions, flow control, functions, classes, input and output operations, debugging, structured programming, and object-oriented programming. Prerequisites: CIS105, or permission of instructor.

CIS163AA   3 Credits   4 Periods
Java Programming: Level I
Introduction to Java programming. Includes features needed to construct Java Applets, Java Applications, control structures, methods, arrays, character and string manipulation, graphics, and object-oriented programming. Prerequisites: CIS105 or permission of instructor.

CIS166   3 Credits   4 Periods
Web Scripting/Programming
Software development for Web sites, including client-side script and Common Gateway Interface (CGI) scripting. Covers Web-based transaction processing and use of databases in conjunction with the Web. Includes security issues. Prerequisites: CIS133CA or CIS133DA or permission of instructor.

CIS175EA   1 Credit   2 Periods
Introduction to Structured Query Language
Introduction to Structured Query Language. Focuses on the query operation, including data collection, grouping and multi-table queries. Prerequisites: None.

CIS183AH   3 Credits   4 Periods
Microsoft Office
Utilization of the Microsoft Office integrated software program. Utilizing electronic spreadsheet, word processing, data base, telecommunication, and graphics components to solve business problems. Prerequisites: None.

CIS190   3 Credits   4 Periods
Introduction to Local Area Networks
Overview of local area networks. Emphasis on the elements of a local area network, current issues and products, and use of a local area network. Includes terminology, hardware and software components, connectivity, resource monitoring and sharing, electronic mail and messaging, and security issues. Prerequisites: CIS105, or permission of instructor.

CIS220DC   3 Credits   4 Periods
Flash: Advanced Animation and ActionScript
Advanced Flash programming, action scripting, tweening, advanced buttons and user input, movie clips, using dynamic sound and text, managing information flow, Object-Oriented Programming concepts in relation to Flash. Prerequisites: CIS120DC or permission of Instructor.

CIS224   3 Credits   4 Periods
Project Management Microsoft Project for Windows
Introduction to project management concepts while working with MS Project to solve complex project management networks, including creating Gantt and PERT charts, tracking project progress, planning for restrictions, and integrating MS Project with other software packages such as Excel, Word, Powerpoint, and cc Mail. Prerequisites: None.

CIS225   3 Credits   4 Periods
Business Systems Analysis and Design
Investigation, analysis, design, implementation and evaluation of business computer systems. Prerequisites: Any programming language or permission of Instructor.

CIS225AB   3 Credits   4 Periods
Object-Oriented Analysis and Design
Methodologies and notations for fundamental object-oriented analysis and design including use cases, objects, classes, stereotypes, and relationships. Object-oriented iterative process for system development. A continuous application development exercise for applying the analysis and design concepts. Prerequisites: Any programming language or permission of Instructor.

CIS226AA   3 Credits   4 Periods
Internet/Intranet Server Administration-UNIX
Set up and management of internet/intranet services, including World Wide Web (WWW) and Simple Mail Transfer Protocol (SMTP) in a UNIX environment. Includes coverage of security issues. Prerequisites: (CIS126DA and CIS133DA), or permission of instructor.

CIS228   3 Credits   4 Periods
Advanced Databases for Practice Management
Advanced installation, configuration and use of Practice Management Database (Electronic Health Record software) for implementation and maintenance of for vendor specific and open source Electronic Health Records (EHRs). Configuration of policies and procedures for data control, security, privacy, and confidentiality of health information in electronic health information management systems. Prerequisites: CIS128 or permission of Instructor.

CIS233AA   1 Credit   2 Periods
Internet/Web Development Level II-A
Introduction to designing and creating pages on the Internet's World Wide Web using the hypertext markup language (H TML). Hands-on experience authoring HTML and preparing beginning web documents. Prerequisites: CIS133BA or permission of instructor

CIS233AB   1 Credit   2 Periods
Internet Web Publishing: FrontPage Level I
Introduction to designing and creating pages on the Internet's World Wide Web using FrontPage. Hands-on experience authoring hypertext markup language (HTML) and preparing beginning web documents. Prerequisites: CIS133BA or permission of instructor.

CIS233AC   1 Credit   2 Periods
Internet Web Publishing: Dreamweaver Level I
Design and development of websites using Dreamweaver. Hands-on experience designing, developing, testing, and publishing web documents that contain client-side web technologies. Prerequisites: CIS133CA or CIS133DA or permission of instructor.

CIS233BA   1 Credit   1 Period
Internet/Web Development Level II-B
Advanced hypertext markup language (HTML), including tables, forms, image maps, gateway scripts, and multimedia. Hands-on experience designing advanced Web presentations. Prerequisites: CIS233AA or permission of instructor.

CIS233CA   1 Credit   1 Period
Internet/Web Development Level II-C
Introduction to Web server access, security and design issues. Covers emerging issues in web publishing. Prerequisites: CIS233BA or permission of instructor.

CIS233DA   3 Credits   4 Periods
Internet/Web Development Level II
Design and creation of presentations on the Internet's World Wide Web with the Web's hypertext markup language (HTML). Hands-on experience authoring HTML and preparing web documents. Covers emerging issues in Web publishing. Prerequisites: CIS133BA or CIS133DA or permission of instructor.

CIS234   3 Credits   4 Periods
XML Application Development
The use of Extensible Markup Language (XML) to make documents smarter, simplify Web automation, and to communicate between databases, both within and between corporations. Includes techniques for XML generation, data extraction and sharing, and transformation and managing of XML files. Prerequisites: CIS133CA or CIS133DA or permission of the instructor.

CIS235   3 Credits   4 Periods
e-Commerce
Introduction to Electronic Commerce on the Internet. Designing an electronic storefront including web page content and development, e-commerce site marketing, advertisement, legal and security considerations, credit card and other debit transaction covered. Also includes current issues in e-commerce. Prerequisites: CIS133CA, or CIS133DA, or permission of instructor.

CIS238   3 Credits   4 Periods
Advanced UNIX System Administration
System administration tasks using one or more versions of UNIX. Topics include: installing the operation system, configuring peripherals, security, monitoring system performance, networking, and troubleshooting. Prerequisites: CIS126DA, or permission of instructor.

CIS238DL   3 Credits   4 Periods
LINUX System Administration
Managing Linux Operating Systems including sophisticated manipulation of file structures, backup systems, printing processes, troubleshooting, user account management, hard disk maintenance and configuration, process monitoring and prioritizing, kernel customization, and system resource control. Preparation for industry certifications such as the SAIR/GNU LCP and LCA certificates, CompTIA's Linux+, RHCT, RHCE, and LPIC. Prerequisites: CIS126AL, CIS126BL and CIS126CL; or CIS126DL or Permission of Instructor.

CIS270   3 Credits   4 Periods
Essentials of Network and Information Security
Threats to security of information systems; responsibilities and basic tools for information security, including communication security, infrastructure security, organizational security and basic cryptography. Introduction to the language of network security and hardware, software and firmware components of an information security system for local, metropolitan, enterprise, and wide area networks. Helps prepare participants for the Comptia Security+ exam and the GIAC Security Essentials Certificate (GSEC). Prerequisites: CNT150, or (MST150 or MST150 any module), or permission of instructor.

CIS290AA   1 Credit   6 Periods
Computer Information Systems Internship
Work experience in business or industry. Prerequisites: Permission of instructor.

CIS290AB   2 Credits   12 Periods
Computer Information Systems Internship
Work experience in business or industry. Prerequisites: Permission of instructor.

CIS290AC   3 Credits   18 Periods
Computer Information Systems Internship
Work experience in business or industry. Prerequisites: Permission of instructor.

CIS296WA   1 Credit   5 Periods
Cooperative Education
Work-college experiences that involve the combined efforts of educators and employers to accomplish an outcome related to the career objectives of the students. Prerequisites: Completion of at least twelve (12) college credits, minimum 2.6 grade point average, and be able to obtain a position related to student's academic or career goals (student's present job may qualify); or permission of instructor. Corequisites: Must be concurrently enrolled in at least one class which is related to student's major or career interest or with permission of the instructor.

CIS298AA   1 Credit   1 Period
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

CIS298AB   2 Credits   2 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

CIS298AC   **3 Credits**   **2 Periods**
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

COMPUTER SCIENCE (CSC)

CSC180   **3 Credits**   **3 Periods**
Computer Literacy
Introduction to computers and technology and their impact in science, engineering and medical/health care occupations and on society. Explores technology, current topics in computing, applications and related issues. Use of application software to create scientific documents, spreadsheets, databases, e- mail and text files, and use of Internet browsers pertaining to science, engineering, and health care fields and personal use. Intended for students in the science, engineering, and medical/health care fields. Prerequisites: None.

CSC283   **3 Credits**   **4 Periods**
Bioinformatics and Scientific Computing
Introduction to Bioinformatics, including history, concepts, major genetic databases and access tools. Computer software and techniques for analyzing one nucleotide or protein sequence, searching for similar sequences, and aligning and comparing two or multiple sequences. Microarray analysis and phylogenetic trees. Application of standard software to bioinformatic computing tasks, including word processing of reports, and use of spreadsheets for statistical analysis and graphing. Text editors, Unix, Internet web site searching and construction, and ethics. Prerequisites: [(BIO156 or BIO181) and (MAT120 or MAT121 or MAT122)], or permission of Instructor. Corequisites: BIO208 or BIO212AA is strongly suggested but not required.

CONSTRUCTION (CNS)

CNS110   **0.5 Credit**   **0.5 Period**
Green Construction Overview
Overview of "green construction". Green energy vs. green building, U.S. Green Building Council (USGBC) and the building life cycle, five main areas of green building standards, Leadership in Energy and Environmental Design (LEED) accreditation, and LEED certification. Prerequisites: Registered apprentice status or permission of the Apprenticeship Coordinator.

COUNSELING AND PERSONAL DEVELOPMENT (CPD)

CPD103BV   **2 Credits**   **2 Periods**
Personal Development for Military Veterans
Assist military veterans in examining role changes, values, strengths, resources, career, readjustment and lifestyle choices. Strategies for coping with life changes, stress, and other personal development needs in transitioning into civilian life. Prerequisites: None.

CPD104   **3 Credits**   **3 Periods**
Career and Personal Development
An overview of the process of career/life planning through self-awareness and understanding. Focus on specific skill development such as dealing with change, decision making, goal setting and understanding lifestyles. Provides opportunity to evaluate interests, skills and values. Emphasis on the development of a comprehensive career search process which includes current occupational information, specific tools for researching the job market and acquiring employment. Prerequisites: None.

CPD150   **3 Credits**   **3 Periods**
Strategies for College Success
Focus on increasing student success through college orientation and personal growth, study skills development, and educational and career planning. Prerequisites: None. [This course is part of the First Year Experience-SUCCESS 101 Program]

CPD150AA   **1 Credit**   **1 Period**
College Orientation & Personal Growth
Emphasis on increasing student success through college orientation, identification of learning style and the use of time management, goal setting, and interpersonal communication strategies. Prerequisites: None.

CPD150AB   **1 Credit**   **1 Period**
Study Skills Development
Emphasis on increasing student success through the use of study strategies including materials organization, note-taking, reading, test-taking, memory, and critical and creative thinking. Prerequisites: None.

CPD150AC   **1 Credit**   **1 Period**
Educational and Career Planning
Emphasis on increasing student success through educational and career planning. Prerequisites: None.

CRITICAL READING (CRE)

CRE101   **3 Credits**   **3 Periods**
College Critical Reading
Emphasis on applying critical inquiry skills to varied and challenging reading materials. Includes analysis, synthesis, and evaluation through written discourse. Prerequisites: (ENG101 or ENG107) and (appropriate reading placement score or grade of "C" or better in RDG091.)

CRE111   **3 Credits**   **3 Periods**
Critical Reading for Business and Industry
Emphasis on reading skills required for success in business and technology. Includes interpretation of technical and professional materials with an emphasis on critical analysis and reading. Prerequisites: Reading Asset test score, or grade of "C" or better in RDG091, or permission of instructor.

DIAGNOSTIC MEDICAL IMAGING (DMI)

DMI100   **0.5 Credit**   **0.5 Period**
Introduction to Diagnostic Medical Imaging
Role of health care worker in diagnostic imaging procedures. Job duties, responsibilities, working conditions and work environments in the inpatient and outpatient clinical settings. Overview of diagnostic and therapeutic procedures. Shadowing experience in medical imaging department. Prerequisites: None.

DMI101   **2 Credits**   **2 Periods**
Radiation Safety
Sources and types of radiation. Units of radiation measurement. Conversions from traditional to system international units. Protection devices, operating equipment (including ancillary devices), and federal and state laws regarding radiation safety. Radiation monitoring devices. Prerequisites: Permission of Instructor.

DMI102   **4 Credits**   **6 Periods**
Radiographic Positioning I
Terminology, procedures, and anatomy pertinent to radiography. Routine radiographic positioning of chest, upper limb, and lower limb. Special projections of the chest, upper and lower limbs. Evaluation of radiographs of the chest, upper and lower limb. The impact of pathology on positioning and radiographic quality. Prerequisites: DMI103 and permission of program director.

DMI103   **1.5 Credits**   **2.5 Periods**
Radiographic Processing
Comprehensive instruction in darkroom chemistry, equipment, and techniques. Discussion of the automatic, daylight, and laser processing procedure that renders physical and chemical changes as a visible radiographic image. Prerequisites: Permission of program director.

DMI104   **6 Credits**   **35 Periods**
Radiography Practicum I
Observation of and familiarization with hospital procedures and environment. Demonstration of appropriate patient care. Process examination requisitions and other documentation related to the procedure. Image acquisition, processing and storage. Operation and maintenance of radiographic equipment. Performance of basic radiographic procedures to include the chest, upper and lower limb. Prerequisites: DMI101, DMI102, DMI103, DMI105, and DMI107, or permission of program director.

DMI105   **3 Credits**   **3 Periods**
Fundamentals of Radiation Physics
Fundamental principles of the physics involved in medical radiography. Simplified math, physical concepts of energy, the structure of matter, static electricity, electric current, and electromagnetism. Generators and motors, high-voltage control, and circuitry of the X-ray tube. Principles and characteristics of X-ray production. Prerequisites: Permission of program director.

DMI106   **1 Credit**   **1 Period**
Radiographic Image Evaluation I
Systematic procedure for evaluating radiographs to determine their diagnostic quality. Prerequisites: DMI102 and DMI107.

DMI107   **4 Credits**   **6 Periods**
Radiographic Technique
Principles related to radiographic exposure. Geometry of image formation and radiographic qualities. Radiographic grids and image receptors. Application of radiographic principles involving problem solving skills. Lab activities provided to reinforce radiographic concepts. Prerequisites: DMI103 and DMI105.

DMI108   **1 Credit**   **1 Period**
Structured Diagnostic Medical Imaging Skills Enhancement
Structured diagnostic imaging cognitive learning and imaging study skills to help students achieve success in their respective imaging courses. Diagnostic medical imaging learning process and critical thinking application skills emphasized in coordination with the level of matriculation. Prerequisites: None. Corequisites: Diagnostic medical imaging program (Medical Radiography, Nuclear Medicine Technology and Diagnostic Medical Ultrasound), or permission of program director.

DMI110   **1.5 Credits**   **2.5 Periods**
Critical Evaluation of the Diagnostic Medical Image
Recognition of acceptable and substandard diagnostic images according to established radiographic criteria. Production of diagnostic images of various regions of the body. Assessment and analysis of medical images to detect positioning and exposure errors. Correction of diagnostic image errors. Impact of pathology on image quality. Application of radiographic principles and problem solving skills of the digital image. Prerequisites: Valid Arizona Medical Radiography Technology Board of Examiners (MRTBE) Practical Technologist license and [BIO160, ENG101, (CRE101 or CRE111), (COM101 or COM110), and HCC146].

DMI112AA   **1.5 Credits**   **2.5 Periods**
Skeletal Procedures I
Radiographic anatomy of the upper and lower limb, pelvis and bones of the thorax. Positioning of the humerus, shoulder, pelvis, hip, and bony thorax. Emphasis on radiation protection, image evaluation and modifications. Serving the culturally diverse patient. Prerequisites: DMI101, DMI102, and DMI107, or permission of instructor.

DMI112AB   **1.5 Credits**   **2.5 Periods**
Skeletal Procedures II
Radiographic anatomy of the vertebral column and cranium. Positioning of the vertebral column and cranium. Emphasis on radiation protection, image evaluation and modifications. Serving the culturally diverse patient. Prerequisites: DMI112AA, or permission of instructor.

DMI113   **1 Credit**   **6 Periods**
Orientation to the Clinical Environment
Observation and familiarization with facility procedures, department specific procedures and protocols and the overall environment. Demonstration of appropriate patient care skills. Familiarization with facility Hospital Information System (HIS) and Radiology Information System (RIS), other specialized computer programs, i.e., Picture Archiving and Communication System (PACS), examination requisitions and other documentation related to procedures performed. Prerequisites: Permission of Program Director.

DMI114AA   **2 Credits**   **10 Periods**
Radiography Practicum IIA
Reinforcement and broadening of knowledge and skills acquired in earlier practicum. Prerequisites: DMI104 or permission of Program Director.

DMI114AB **2 Credits** **10 Periods**
Radiography Practicum IIB
Reinforcement and broadening of knowledge and skills acquired in earlier practicum. Prerequisites: DMI114AA, or permission of Program Director.

DMI118AA **1 Credit** **1 Period**
Contrast Media Procedures I
Terminology, gross and radiographic anatomy, procedures and film evaluation related to contrast media procedures. Type, administration, and adverse reactions related to contrast media. Unique positioning situations. Prerequisites: DMI101, DMI102, and DMI107, or permission of instructor.

DMI118AB **1 Credit** **1 Period**
Contrast Media Procedures II
Terminology, gross and radiographic anatomy, procedures and film evaluation related to contrast media procedures. Type, administration, and adverse reactions related to contrast media. Select topics related to pediatric radiography. Unique positioning situations. Prerequisites: DMI118AA or permission of instructor.

DMI119 **1 Credit** **1 Period**
Introduction to Digital Information and Management
Use of computers and digital information in medical imaging to include hardware, software and peripheral devices. Clinical applications for Radiology, Nuclear Medicine, Sonography, Computed Tomography (CT), Magnetic Resonance Imaging (MRI) and Radiation Therapy. Implications for digital imaging, computer-aided diagnosis, Health Information Portability and Accountability Act (HIPAA), patient safeguards and image and information management. Prerequisites: Health care professional.

DMI204 **4 Credits** **30 Periods**
Radiography Practicum III
Continuation of supervised student performance of routine radiological procedures, including surgery and portable procedures. Prerequisites: DMI114AA and DMI114AB, or permission of instructor.

DMI211 **0.5 Credit** **0.5 Period**
Pharmacology of Contrast Agents
Common drug nomenclature and pharmacology of contrast agents. Correct preparation, dosages, and administration of contrast agents. Chemical characteristics and properties of contrast agents. Adverse reactions, patient care issues, and medical/legal issues. Prerequisites: Currently enrolled in medical radiography program, or graduate radiologic technologist, or permission of instructor.

DMI212 **1 Credit** **1 Period**
Advanced Radiographic Procedures
Physical space requirements and equipment required for advanced radiographic procedures. Types and applications for needles, guide wires, and catheters. Advanced and interventional radiographic procedures. Types of imaging systems used for various procedures. Prerequisites: DMI112AA, DMI112AB, DMI118AA, and DMI118AB or permission of instructor.

DMI214 **5 Credits** **30 Periods**
Radiography Practicum IV
Reinforcement and broadening of routine and advanced procedures, portable skills and surgical procedures acquired in DMI204, Radiography Practicum III. Operation and maintenance of radiographic equipment. Correct use of radiation protection devices. Evaluation of radiographic images. Ethical and professional job related skills. Prerequisites: DMI204.

DMI215 **2 Credits** **2 Periods**
Radiation Biology
Provide an overview of the principles of the interaction of radiation with living systems. Radiation effects on molecules, cells, tissues and the body as a whole. Factors affecting biological response including acute and chronic effects of radiation. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies and health care organizations. Prerequisites: DMI101 and DMI105.

DMI216 **1 Credit** **1 Period**
Radiographic Image Evaluation II
Systematic procedure for evaluating radiographic images to determine their diagnostic quality. Prerequisites: DMI106.

DMI220 **3 Credits** **3 Periods**
Sectional Anatomy
Sectional human anatomy in the transverse and mid-sagittal planes. Emphasis on the brain, neck, chest, abdomen and pelvic cavity. Prerequisites: Prerequisites: BIO160 and (HCC145 or HCC146), or a graduate of a related medical program of study or currently registered as a technologist in radiography, nuclear medicine, radiation therapy or sonography.

DMI221 **2 Credits** **2 Periods**
Advanced Imaging Modalities and Radiation Protection
Equipment used in digital imaging, including image intensification, and spot cassette. Calculation of minification and brightness gain. Recording, viewing and storage systems. Components and operating principles related to digital fluoroscopy. Principles, physics, and instrumentation related to digital radiography and computed tomography. Prerequisites: DMI105 and DMI107.

DMI222 **1 Credit** **1 Period**
Advanced Radiologic Pathology
Application of terminology related to the disease process and the general principles of disease. Standard precautions - disease control measures to include education, asepsis, isolation, and communicability. Radiographic appearances of specific forms of pathology. Symptoms, prognosis, and diagnosis of specific forms of pathology. Prerequisites: Currently enrolled in medical radiography program, or graduate radiologic technologist, or permission of Instructor.

DMI224 **5 Credits** **30 Periods**
Radiography Practicum V
Reinforcement and broadening of routine and advanced procedures, portable skills and surgical procedures acquired in earlier practicum. Operation and maintenance of radiographic equipment. Correct use of radiation protection devices. Evaluation of radiographic images. Ethical and professional job-related skills. Prerequisites: DMI214.

DMI225   1 Credit   1 Period
Quality Improvement
Components, tests, and procedures for evaluation of radiographic systems to assure consistency in the production of quality images. State and federal regulations. Prerequisites: DMI103, DMI105, and DMI107, or permission of instructor.

DMI226   1 Credit   1 Period
Radiographic Image Evaluation III
Systematic procedure for evaluating radiographs to determine their diagnostic quality. Prerequisites: DMI216.

DMI227   1 Credit   1 Period
Radiography Seminar
Use of skills and resources for reviewing content areas examined by the American Registry of Radiologic Technologists (ARRT). Professional job-seeking procedures and development of resume. Prerequisites: Permission of instructor.

DMI228   1 Credit   6 Periods
Radiography Practicum VI
Advanced imaging procedures. May be repeated for a total of three (3) credit hours. Prerequisites: Permission of instructor and acceptance by sponsoring clinical institution.

DMI230AA   1 Credit   1 Period
Introduction to Diagnostic Ultrasound: History
History of ultrasound including medical applications. Job description including opportunities, training, roles and responsibilities of diagnostic medical sonographers in the workplace. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI230AB   1 Credit   1 Period
Introduction to Diagnostic Ultrasound: Equipment
Curriculum, licensure, roles and responsibilities of diagnostic medical sonographers in the workplace. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI230AC   1 Credit   3 Periods
Introduction to Diagnostic Ultrasound: Laboratory
Use and maintenance of ultrasound equipment. Roles and responsibilities of diagnostic medical sonographers in the workplace. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI231   2 Credits   2 Periods
Professional and Patient Interactions
Principles of verbal and non-verbal communication skills through the development of understanding self, patients, colleagues and others. Includes verbal communication, written instructions, communications devices, telephone protocol, resume writing and job interviewing techniques. Prerequisites: None.

DMI232AA   2 Credits   2 Periods
Medical Ultrasound Physics and Instrumentation I
Principles of ultrasound physics and instrumentation necessary for the performance of diagnostic sonographic examination. Biological effects of ultrasound energy. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI232AB   1 Credit   3 Periods
Medical Ultrasound Physics and Instrumentation II
Application of principles of ultrasound physics and instrumentation necessary for the performance of diagnostic sonographic examination. Quality control materials and procedures. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI238AA   3 Credits   3 Periods
Abdominal Procedures: I
Normal and pathologic ultrasound appearances of the liver, gallbladder, pancreas, biliary tree, spleen, adrenal glands, kidneys, major vascular structures, and lymph nodes. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DMI238AB   1 Credit   3 Periods
Abdominal Procedures II: Lab
Ultrasound evaluation of upper abdominal organs. Normal ultrasound appearances of the liver, gallbladder, pancreas, biliary tree, spleen, adrenal glands, kidneys, major vascular structures, and lymph nodes. Prerequisites: Admission to Diagnostic Medical Ultrasound program.

DIAGNOSTIC MEDICAL SONOGRAPHY (DMS)

DMS100   0.5 Credit   0.5 Period
Introduction to Diagnostic Medical Sonography
Role of health care worker in diagnostic medical sonography. Job duties, responsibilities, working conditions and work environments in the inpatient and outpatient clinical settings. Overview of diagnostic and therapeutic procedures. Shadowing experience in diagnostic sonography department. Prerequisites: None.

DMS110   3 Credits   5 Periods
Introduction to Diagnostic Sonography
History of ultrasound including medical applications. Job description including opportunities, training and curriculum. Licensure, use and maintenance of sonography equipment, roles, rules and responsibilities of Diagnostic Medical Sonographers in the workplace. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS120   4 Credits   6 Periods
Ultrasound Imaging: Abdominal Procedures
Ultrasound evaluation of upper abdominal organs. Normal and pathologic ultrasound appearances of the liver, gallbladder, pancreas, biliary tree, spleen, adrenal glands, kidneys, major vascular structures, and lymph nodes. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS130   4 Credits   4 Periods
Ultrasound Imaging: OB/GYN Procedures
Ultrasound evaluation of the female pelvis, reproductive system, and fetus. Diagnostic tests related to the ultrasound procedure. Normal and pathologic ultrasound appearances of the fetus, placenta, uterus, cervix, fallopian tubes, and ovaries. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS140   **2 Credits**   **2 Periods**
Ultrasound Case Studies: Part I
Medical terminology, anatomy, physical principles, and techniques for determining proper technical factors. Anatomical variants, normal, and pathological sonographic findings in diagnostic ultrasound case presentations. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS145   **3 Credits**   **3 Periods**
Clinical Pathology for Diagnostic Imaging
Disease etiology and impact on the human body. Physiologic effects of disease on body systems. Role of Diagnostic Medical Imaging (DMI) modalities in the diagnosis and treatment of selected disease processes. DMI as part of the health care team. Cultural implications in the prevention and treatment of disease. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS150   **3 Credits**   **5 Periods**
Sonographic Principles and Instrumentation
Sonographic principles and instrumentation necessary for the performance of diagnostic sonographic examinations. Quality control materials and procedures. Biological effects of ultrasound energy. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS155   **1 Credit**   **4 Periods**
Clinical Practicum I
Observation of correct hospital policies and procedures in the clinical setting. Health delivery systems to include private, for profit, not-for-profit, and government. The job description, duties, and functions of the sonographer. Career opportunities in ultrasound. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS161   **1 Credit**   **3 Periods**
Clinical Practicum II-AA
Technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the beginner level. Hospital procedures and policies. Observation, assistance, and performance of, clerical, patient care, and sonographic duties under strict supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS162   **2 Credits**   **3 Periods**
Clinical Practicum II-AB
Development of technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the beginner level. Hospital procedures and policies. Continued observation, assistance and performance of clerical, patient care and sonographic duties under strict supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS163   **3 Credits**   **3 Periods**
Clinical Practicum II-AC
Continued development of technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the beginner level. Hospital procedures and policies. Ongoing observation, assistance, and performance of clerical, patient care, and sonographic duties under strict supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS171   **2 Credits**   **8 Periods**
Clinical Practicum III-AA
Technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the advanced beginner level. Reinforcement and broadening of knowledge base related to hospital procedures and policies. Observation, assistance and performance of patient care and sonographic duties under moderate supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS172   **2 Credits**   **2 Periods**
Clinical Practicum III-AB
Continued technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the advanced beginner level. Ongoing reinforcement and broadening of knowledge base related to hospital procedures and policies. Continued observation, assistance and performance of patient care and sonographic duties under moderate supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS210   **3 Credits**   **5 Periods**
Concepts of Vascular Imaging
Vascular physics and terminology. Application of imaging concepts to arterial, venous, and cerebrovascular ultrasound. Normal, abnormal and pathologic states of human vascular anatomy. Review and demonstration of selected scanning protocols to include extremity and cerebral vascular systems. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS220   **1 Credit**   **1 Period**
High Risk Obstetric/Gynecology Sonography
Sonographic overview of the female reproductive system. High risk intervention and tests related to sonography. Normal and abnormal sonographic presentations of the uterus and fetus in pregnancy. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS230   **1 Credit**   **1 Period**
Introduction to Echocardiography
Anatomy and physiology of the heart. Normal, abnormal and pathologic states of cardiac anatomy as it relates to diagnostic sonography. Demonstration of scanning techniques in echocardiography. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS235   **1 Credit**   **1 Period**
Ultrasound Breast Imaging
Ultrasound imaging of the breast. Includes terminology, technique, physics and instrumentation. Breast anatomy, physical examination and procedure findings. Pathology and correlation with other imaging modalities. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS240   **2 Credits**   **2 Periods**
Ultrasound Case Studies: Part II
Medical terminology, anatomy, physical principles, and technology for determining proper technical factors. Anatomical variants, normal, and pathological sonographic findings in diagnostic ultrasound case presentations. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS241   2 Credits   2 Periods
Ultrasound Case Studies: Part III
Medical terminology, anatomy, physical principles, and technology for determining proper technical factors. Anatomical variants, normal, and pathological sonographic findings in diagnostic ultrasound case presentations. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS245   1 Credit   1 Period
Neurosonography
Neuroanatomy and neurosonography of the brain and spinal cord. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS250   2 Credits   2 Periods
Ultrasound Anatomy
Normal sonographic human anatomy in sagittal, transverse, oblique, coronal planes. Emphasis on abdominal, musculoskeletal, male and female pelvic imaging, and obstetrical imaging. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS261   2 Credits   10 Periods
Clinical Practicum IV-AA
Technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the intermediate level. Reinforcement and broadening of knowledge base related to hospital procedures and policies. Observation, assistance and performance of patient care and sonographic duties under limited supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS262   3 Credits   11 Periods
Clinical Practicum IV-AB
Development of technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the intermediate level. Ongoing reinforcement and broadening of knowledge base related to hospital procedures and policies. Continued observation, assistance and performance of patient care and sonographic duties under limited supervision. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS270   1 Credit   10 Periods
Clinical Practicum V-AA
Technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the advanced level. Clinical diagnostic experiences in routine/high risk obstetrics, pelvic, vascular, abdominal and small parts scanning. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS271   2 Credits   10 Periods
Clinical Practicum V-AB
Development of technical and professional aspects of diagnostic ultrasound in a hospital or clinical setting at the advanced level. Continued opportunity for clinical diagnostic experiences in routine/high risk obstetrics, pelvic, vascular, abdominal and small parts scanning. Focus on progression to independent level of function. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS272   2 Credits   10 Periods
Clinical Practicum V-AC
Culminating clinical practice course with application of theoretical and practical concepts related to diagnostic ultrasound. Emphasis on independent performance of all clinical diagnostic procedures including routine/high risk obstetrics, pelvic, vascular, abdominal and small parts scanning. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS281   1 Credit   1 Period
Ultrasound Registry Preparation Seminar: Physics and Instrumentation
Intensive review of major content measured in the American Registry for Diagnostic Medical Sonography certification examination. Physics and instrumentation in ultrasound technology. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS282   1 Credit   1 Period
Ultrasound Registry Preparation Seminar: Abdominal and Small Parts Imaging
Intensive review of major content measured in the American Registry for Diagnostic Medical Sonography certification examination. Specialities of abdominal and small parts imaging. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS283   1 Credit   1 Periods
Ultrasound Registry Preparation Seminar: Obstetrics, Gynecology, and Neonate
Intensive review of major content measured in the American Registry for Diagnostic Medical Sonography certification examination. Specialities of obstetrics, gynecology, and neonate imaging. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS284   1 Credit   1 Period
Ultrasound Registry Preparation: Vascular Imaging
Anatomy and physiology of the vascular system. Testing parameters and methods for vascular examinations. Scan protocol for sonographic evaluation of head and neck, extremities, upper abdomen and pelvis vasculature. Interpret scans and special cases. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS285   2 Credits   2 Periods
Intermediate Vascular Technology
Sonographic evaluation of the upper and lower peripheral vascular system and the cerebrovascular system. Normal and pathologic sonographic imaging and Doppler evaluation of the venous, arterial systems of the upper and lower extremities, and intra and extracranial vessels. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS286   2 Credits   2 Periods
Advanced Vascular Technology
Vascular evaluation of the abdominal vicera and small parts. Normal and pathologic sonographic imaging and Doppler evaluation of the venous and arterial systems of the abdominal organs and small body parts. Capabilities, limitations, protocols and techniques required for diagnosis of the systemic, hepatoportal, and collateral systems. Preoperative mapping of the radial, mammary, and epigastric arteries. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS290   **4 Credits**   **4 Periods**
Advanced Medical Sonography Procedures
Presentation of advanced topics in sonography including state of the art equipment. Superficial organs, heart and vessels, neurosonography, musculoskeletal, intraoperative, and interventional procedures. Aseptic technique, medical-legal and patient record keeping and image acquisition for performance of advanced sonographic examinations. Prerequisites: Admission to Diagnostic Medical Sonography program.

DMS295   **2 Credits**   **3.5 Periods**
Stress Echocardiography
Anatomy and physiology of the heart. Normal and stressed states of cardiac anatomy as it relates to diagnostic sonography. Performance of stress echocardiography exam. Pharmacological agents used in stress echocardiography. Prerequisites: Completion of echocardiography program, or Registered Diagnostic Cardiac Sonographer (RDCS), or Registered Diagnostic Medical Sonographer (RDMS), or Registered Cardiac Sonographer (RCS) credentials.

ECONOMICS (ECN)

ECN211   **3 Credits**   **3 Periods**
Macroeconomic Principles
A descriptive analysis of the structure and function of the American economy. Emphasis on basic economic institutions and factors that determine national income and employment levels. Consideration is given to the macroeconomic topics of national income, unemployment, inflation and monetary and fiscal policies. Prerequisites: None.

ECN212   **3 Credits**   **3 Periods**
Microeconomic Principles
Microeconomic analysis including the theory of consumer choice, price determination, resource allocation and income distribution. Includes non-competitive market structures such as monopoly and oligopoly, and the effects of government regulation. Selected issues are examined. Prerequisites: None.

EDUCATION (EDU)

EDU221   **3 Credits**   **3 Periods**
Introduction to Education
Overview of the historical, political, economic, social, and philosophical factors that influence education and make it so complex. Opportunity for students to assess their interest and suitability for teaching. Requires minimum of 30 hours of field experience in elementary or secondary classroom environment. Prerequisites: None.

EDU230   **3 Credits**   **3 Periods**
Cultural Diversity in Education
Examination of the relationship of cultural values to the formation of self-concept and learning styles. Examination of the role of prejudice, stereotyping and cultural incompatibilities in education. Emphasis on teacher preparation (preservice and/or inservice) to offer an equal educational opportunity to students of all cultural groups. Prerequisites: None.

EDU240   **3 Credits**   **3 Periods**
Teaching and Learning in the Community College
The history, functions, organization and current issues in the community/junior college with emphasis on the Arizona community colleges.

Includes focus on the design and practice of effective community college teaching and learning with special emphasis on the Maricopa County Community College District. Prerequisites: None.

ELECTRICAL TECHNOLOGY (ELC)

ELC105   **3 Credits**   **3 Periods**
Electricity for Industry
Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of electro-mechanical power sources. Single-phase motors, motor resistance and motor terminals. Function of electro-magnetic solenoids and transformers. National Electric Code. Prerequisites: None. Corequisites: ELC/FAC/HVA105LL or permission of instructor.

ELC105LL   **1 Credit**   **3 Periods**
Electricity for Industry Lab
Diagramming and assembling series circuits, parallel circuits and wiring relays, thermostats, switches and lights. Electrical readings on compressors. Emphasis on safety. Prerequisites: None. Corequisites: ELC/FAC/HVA105 or permission of instructor.

ELC115   **3 Credits**   **3 Periods**
Motors, Controls and Wiring Diagrams
Principles of three-phase motors. Wye and Delta wiring. Calculation of motor current draw. Sequence of operation, wiring diagram and electrical components associated with industrial equipment. Procedures for evaluating electrical problems. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115LL or permission of department.

ELC115LL   **1 Credit**   **3 Periods**
Motors, Controls and Wiring Diagrams Lab
Drawing wiring diagrams, wiring systems and checking electrical circuits. Troubleshooting electrical problems of three-phase motors and controls. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115 or permission of department.

ELC119   **3 Credits**   **3 Periods**
Concepts of Electricity and Electronics
Principles of electric circuits, magnetism and electromagnetism including basic motors and generators. Use of basic measuring instruments. Includes an overview of electronics in the modern world. Prerequisites: None.

ELC120   **3 Credits**   **3 Periods**
Solid State Fundamentals
Theory of operation of semi-conductor devices, component and system construction, operation, installation, and service. Specific and practical applications in relations to temperature, light, speed and pressure control. Includes amplifiers, power supplies, integrated circuits, fiberoptics, and safety. Prerequisites: None.

ELC123   **3 Credits**   **3 Periods**
Residential Electrical Wiring and Codes
Analyze and interpret residential drawings, local codes and specific sections of the National Electrical Code. Includes needed materials

derived from plans and specifications and the proper procedures for wiring a residence. Prerequisites: None.

ELC124   3 Credits   3 Periods
Industrial Electrical Wiring and Codes
In-depth study of industrial electrical power techniques of low, medium and high voltage systems. Selection of electrical distribution components, single and three phase systems, one- line diagrams, motors, transformers, protective devices, power factor, demand factor, conductor selection, system planning, grounding and energy management. Prerequisites: ELC123 or permission of instructor.

ELC125   3 Credits   3 Periods
Commercial Electrical Wiring and Codes
In-depth study of commercial electrical power distribution techniques of low voltage (under 600 volt) systems. Selection of electrical distribution components, single and three systems, on-line diagrams and conductor selection. System grounding, planning and over current protection. Prerequisites: ELC123 or permission of instructor.

ELC144   2 Credits   2 Periods
Basic Automated Systems Using Programmable Controllers
Principles of automated control systems. Principles and application of programmable controllers: Control functions, hardware, logic, programming, documentation, troubleshooting, start-up, maintenance and operation. Commercial and industrial control applications. Introduction to commercial programmable controllers. Prerequisites: Permission of instructor.

ELC162   3 Credits   3 Periods
Electrical Codes and Inspection I
Analysis of diagrams and application of current code interpretations. Includes local exceptions and practices. Prerequisites: ELE100 and ELE101 or permission of instructor.

ELC163   3 Credits   3 Periods
Electrical Codes and Inspection II
National Electrical Code (NEC) requirements for hazardous locations, special use and occupancies. Commercial, industrial and service locations. Fiber optics, communications and other state-of-the-art applications. Local inspection practices and requirements. Prerequisites: ELC162.

ELC164   3 Credits   3 Periods
Grounding and Bonding
Grounding and bonding terminology including National Electric Code (NEC) Articles 250. Interpreting code requirements for grounding and bonding. Code requirements for field installation. Prerequisites: None.

ELC210   3 Credits   3 Periods
AC Machinery and DC Machinery
Principles and operation of AC and DC motors, generators, and alternators. Includes single-phase motors along with induction, synchronous, and wound-rotor types of three-phase motors. DC motors including shunt-field, series field, wound rotor, permanent magnet, stepper and brushless types. Prerequisites: None.

ELC214   3 Credits   3 Periods
Servo Systems
Introduction to Servo Systems usages and applications of servos, types of transducers used in servo systems, driver systems including motors, power amplifiers, and control amplifiers; rotary and velocity control systems; and resolvers, optical encoders, linear variable differential transformers, and linear position servo systems. Prerequisites: (FAC/HVA/ELC105 or ELC119) and (FAC/HVA186 or GTC185). Corequisites: ELC214LL.

ELC214LL   1 Credit   3 Periods
Servo Systems Lab
Introduction to Servo Systems laboratory applications of servos, types of transducers used in servo systems, driver systems including motors, power amplifiers, and control amplifiers; rotary and velocity control systems; and resolvers, optical encoders, linear variable differential transformers, and linear position servo systems. Prerequisites: (HVA/FAC/ELC105 and HVA/FAC/ELC 105LL, or ELC119) and (FAC/HVA186 or GTC185). Corequisites: ELC214.

ELC217   3 Credits   3 Periods
Motor Controls
Electrical symbols, line diagrams and logic. Contacts and starters, control devices, reversing circuits and power distribution systems. Magnetism and magnetic solenoids, reduced voltage starters, and circuits. Hand tools and safety procedures. Prerequisites: None.

ELC218   3 Credits   3 Periods
Variable Frequency Drives
Principles and operation of frequency controlled AC motor drives, including current source inverters (CSI), variable voltage inverters (VVI) and pulse width modulated inverters (PWM). Heating, ventilation and air conditioning (HVAC) applications along with energy savings, motor pump sizing and torque load calculations. Prerequisites: Permission of instructor.

ELC219   4 Credits   6 Periods
Programmable Controllers
Principles and applications of programmable logic controls (PLC's). Numbering systems, control strategies, and ladder logic. Basic machine functions and operations to include programming, troubleshooting and maintenance. Application of PLC programming, operations and troubleshooting skills. Prerequisites: ELC/FAC/HVA105 and ELC/FAC/HVA115 and ELC119, or permission of instructor.

ELC298AA   1 Credit   1 Period
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

ELECTRICIAN: APPRENTICESHIP (ELA)

ELA111   4 Credits   6 Periods
Construction Electricity I
Introductory concepts in electrical theory, use of the National Electrical Code, materials and tools of the trade. Basic splicing, anchoring, and fusing procedures; math review, solving simple equations, ratio and proportions, and percentages. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

ELA112   4 Credits   6 Periods
Construction Electricity II
Advanced electrical theory, trade math and the National Electrical Code. Emphasis on job information, material and tools of the trade and introduction to blueprint reading. Prerequisites: ELA111.

ELA123   4 Credits   6 Periods
Construction Electricity III
National Electrical Code related to transformers and circuitry; electrical theory of inductance, and capacitance; use of AC and DC meters. Operation of incandescent lamps, rectifiers and capacitors. Blueprint reading and sketching techniques. Prerequisites: ELA112.

ELA124   4 Credit   6 Periods
Construction Electricity IV
Series and parallel circuitry and National Electrical Code as it relates to wiring calculations and equipment. Installation of fire alarm systems and air conditioning/refrigeration systems. Rope and rigging for electricians. Application of blueprint reading skills. Prerequisites: ELA123.

ELA235   4 Credits   6 Periods
Advanced Construction Electricity I
Safety on the job. Basic theoretical concepts; wiring systems; types of motors; advanced blueprint reading. Prerequisites: ELA124.

ELA236   4 Credits   6 Periods
Advanced Construction Electricity II
Basics of motor controls, types of motor controls, and motor control circuitry; National Electrical Code for hazardous locations, different class installations, and special occupancies. Prerequisites: ELA235.

ELA247   4 Credit   6 Periods
Advanced Construction Electricity III
Nuclear safety precautions; series and parallel resonance electrical theory; electronics - semiconductors, transistors, circuit configurations, amplifiers, coupling networks, and oscillators; National Electrical Code for busways; blueprint applications for lighting and electrical equipment rooms. Prerequisites: ELA236.

ELA248   4 Credits   6 Periods
Advanced Construction Electricity IV
Special devices and application of electronics. Final code study and review. Instrumentation including measurement and control, temperature, pressure and level, flow, control, and application. Developing a basic logic circuit and installing stairway and emergency lighting systems. Prerequisites: ELA247.

ELA252   4 Credits   6 Periods
Advanced Construction Electricity V
International Brotherhood of Electrical Workers (IBEW) programs. Sexual harassment sensitivity training. Fire alarm systems, installations, control processes, telephone installations, telecommunication networks and high voltage testing. Prerequisites: (Registered apprentice status and ELA248) or permission of the apprenticeship coordinator.

ELA253   4 Credits   6 Periods
Advanced Construction Electricity VI
Heating, ventilation and air conditioning. Locating cable faults, installing and trouble-shooting alarm systems. Programmable Logic Controllers. Prerequisites: (Registered apprentice status and ELA252) or permission of the apprenticeship coordinator.

ELECTRONEURODIAGNOSTIC TECHNOLOGY (EEG)

EEG116   4 Credits   5 Periods
Basic Electroneurodiagnostic Skills
Theory, practical application, and clinical procedures germane to the electroneurodiagnostic (EEG) department. Stress on hospital orientation, job competency, professional growth, and interpersonal communications with staff and patients. Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG130   3 Credits   3 Periods
Introduction to EEG
Introduction to EEG (Electroneurodiagnostic) theory, with emphasis on instrumentation, testing protocol and major disorders for which EEG is diagnostically useful. Prerequisites: Admission to the Electroneurodiagnostics Program or Admission to Polysomnographic Technology Program.

EEG200   3 Credits   18 Periods
Intermediate EEG Skills-Clinical Rotation Lab
Clinical application of Electroneurodiagnostic (EEG) skills and knowledge acquired during pre-requisites courses. Full supervision of tests performed with progression to independent testing. Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG201   4 Credits   6 Periods
Intermediate EEG
Expanded study of neurological and neurophysiological medicine. Studies in cerebrovascular and central nervous system lesions, metabolic and infectious disease, trauma, congenital and pediatric disorders. Extensive record review. Normal and abnormal Electrocardiograms (EKG) patterns related to Electoencephalogram (EEG) testing. Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG205   3 Credits   4 Periods
Applied Evoked Potentials
Theoretical and practical aspects of Evoked Potentials (EP), mainly Visual Evoked Response (VER), Brain Auditory Evoked Response (BAER), and Somatosensory Evoked Potential (SSEP) tests. EP instrumentation, recording techniques and data analysis of electrical activity of the nervous system elicited by using selected physical stimuli (evoked potentials) and concepts of signal averaging, (in accordance with the most recent American Clinical Neurophysiology Society (ACNS) guidelines on Evoked Potentials). Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG206   3 Credits   4 Periods
Advanced EEG
Comprehensive, advanced study of neurological and neurophysiological medicine. Studies in cerebrovascular and central nervous system lesions, metabolic and infectious disease, trauma and congenital and pediatric disorders. Normal and abnormal pattern review. Case presentations. Board Examination review. Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG210   3 Credits   3 Periods
Applied Neurophysiology
Introduction to central nervous system. Emphasis on conduction pathways, anatomy, and blood supply. Survey of neurotransmitters, pharmacology and current research. Prerequisites: Admission to the Electroneurodiagnostics Program.

EEG211   3 Credits   18 Periods
Advanced EEG Skills-Clinical Lab
Clinical application of Electroneurodiagnostic (EEG) skills and knowledge acquired during didactic courses and Intermediate EEG Skills Clinical Lab. Full supervision of tests performed with progression to independent testing. Prerequisites: Admission to the Electroneurodiagnostics Program.

ELECTRONIC TECHNOLOGY (ELE)
ELE101   3 Credits   3 Periods
Beginning Algebra for Technology
Basic axioms of algebra, linear equations in one or two variables, operations on polynomials, rational expressions, simultaneous solutions of linear equations, laws of exponents. Prerequisites: Score of 19 on Technical Mathematics placement test, or Grade of "C" or better in GTC/MET107, or MAT082, or equivalent.

ELE105   5 Credits   5 Periods
Algebra-Trigonometry for Technology
Topics from college algebra and trigonometry essential to the study of electronics; polynomials, exponential and logarithmic functions, complex numbers, and trigonometric functions and identities. Prerequisites: A grade of "C" or better in either ELE101, or MAT090, MAT091, or MAT092, or equivalent, or score of 16 on Technical Algebra placement test.

ENGLISH (ENG)
ENG071   3 Credits   3 Periods
Language Skills: Speaking and Writing Standard English
Emphasis on basic Standard English speaking and writing skills with a focus on essential grammar in developing effective sentence-level speaking and written strategies. Prerequisites: Appropriate writing placement test score or permission of Department or Division.

ENG081   3 Credits   3 Periods
Basic Writing Skills
Emphasis on preparation for college-level composition with a focus on foundational skills. Establishing effective writing strategies through six or more writing projects comprising at least 1500 words in total. Prerequisites: Appropriate English placement test score, or ENG071 with a grade of "C" or better, or permission of department/division chair.

ENG091   3 Credits   3 Periods
Fundamentals of Writing
Emphasis on preparation for college-level composition with a focus on organizational skills. Developing effective writing strategies through five or more writing projects comprising at least 2000 words in total. Prerequisites: Appropriate writing placement test score, or a grade of "C" or better in ENG081 or ESL087, or permission of Department or Division.

ENG101   3 Credits   3 Periods
First-Year Composition
Emphasis on rhetoric and composition with a focus on expository writing and understanding writing as a process. Establishing effective college-level writing strategies through four or more writing projects comprising at least 3,000 words in total. Prerequisites: Appropriate English placement test score or (a grade of "C" or better in ENG091).

ENG102   3 Credits   3 Periods
First-Year Composition
Emphasis on rhetoric and composition with a focus on persuasive, research-based writing and understanding writing as a process. Developing advanced college-level writing strategies through three or more writing projects comprising at least 4,000 words in total. Prerequisites: ENG101 with a grade of "C" or better.

ENG107   3 Credits   3 Periods
First-Year Composition for ESL
Equivalent of ENG 101 for students of English as a Second Language (ESL). Emphasis on rhetoric and composition with a focus on expository writing and understanding writing as a process. Establishing effective college-level writing strategies through four or more writing projects comprising at least 3,000 words in total. Prerequisites: Appropriate ASSET/COMPASS placement test score, or a grade of "C" or better in ENG091 or ESL077.

ENG108   3 Credits   3 Periods
First-Year Composition for ESL
Equivalent of ENG102 for students of English as a Second Language (ESL). Emphasis on rhetoric and composition with a focus on persuasive, research-based writing and understanding writing as a process. Developing advanced college-level writing strategies through three or more writing projects comprising at least 4,000 words in total. Prerequisites: Grade of C, or better, in ENG107.

ENG111   3 Credits   3 Periods
Technical and Professional Writing
Covers analyzing, planning, organizing, researching, and writing correspondence, reports, and presentations for specific work-related audiences. Includes integrating data and graphics into work-related documents and presentations. Prerequisites: ENG101 with a grade of "C" or better, or permission of instructor.

ENG210   3 Credits   3 Periods
Creative Writing
Skills and techniques used in the production of marketable materials for contemporary publications that buy prose fiction, poetry, and expository articles. May be repeated for a total of six (6) credit hours with departmental approval. Prerequisites: ENG102 with a grade of "C", or better, or permission of department.

ENGLISH AS A SECOND LANGUAGE (ESL)

ESL010   3 Credits   3 Periods
English as a Second Language I: Grammar
First level of English as a Second Language (ESL). Emphasis on basic conversational skills, pronunciation, vocabulary building and grammar. Some reading and sentence level writing. Credit (P) or no credit (Z). Standard grading available according to procedures outlined in the catalog. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score.

ESL011   3 Credits   3 Periods
English as a Second Language I- Listening and Speaking
Emphasis on listening and speaking skills involving survival skills. Asking and answering questions related to work, shopping, and personal safety. May be repeated for a maximum of six credits. Prerequisites: Appropriate ESL placement test score or ESL002.

ESL020   3 Credits   3 Periods
English as a Second Language II: Grammar
Second level of English as a Second Language (ESL). Continued emphasis on conversational skills, pronunciation, vocabulary building and grammar with some reading and sentence level writing. Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score, or a grade of "P" or "C" or better in ESL010, or (ESL010AA, ESL010AB, and ESL010AC).

ESL021   3 Credits   3 Periods
English as a Second Language II-Listening and Speaking
Emphasis on listening and speaking skills involving social exchange. Asking and answering questions, using tag questions. Practice with question and answer patterns. Polite questions and responses. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score or ESL010 or ESL011 or ESL012 or RDG010.

ESL030   3 Credits   3 Periods
English as a Second Language III: Grammer
Third level of English as a Second Language (ESL). Emphasis on sentence structure and paragraph building. Extensive grammar study and writing practice. Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score, or a grade of "P" or "C" or better in ESL020, or (ESL020AA, ESL020AB, and ESL020AC).

ESL031   3 Credits   3 Periods
English as a Second Language III-Listening and Speaking
Emphasis on listening and speaking skills related primarily to the academic environment. Asking questions, working in small groups, using college resources, informal oral presentation. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score or ESL020 or ESL021 or ESL022 or RDG020.

ESL032   3 Credits   3 Periods
ESL III-Writing with Oral Practice
Emphasis on complex sentence patterns in writing and speech. Introduction to the prewriting and writing process in a college setting. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL course placement score, or a grade of "C" or better in ESL022, or permission of instructor.

ESL040   3 Credits   3 Periods
English as a Second Language IV: Grammar
Fourth level of English as a Second Language (ESL). Continued emphasis on sentence structure and paragraph building. Extensive grammar study and writing practice. Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score, or a grade of "P" or "C" or better in ESL030, or (ESL030AA, ESL030AB, and ESL030AC).

ESL041   3 Credits   3 Periods
English as a Second Language IV: Listening and Speaking
Emphasis on academic skills. Listening to lectures, notetaking, peer interaction, accessing and using media resources, formal oral presentations. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score or ESL030 or ESL031 or ESL032 or RDG030.

ESL042   3 Credits   3 Periods
ESL IV-Writing with Oral Practice
Emphasis on paragraph writing and oral recitation of complex sentences and paragraphs. Introduction to the prewriting and writing process for short essays. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL course placement score, or a grade of "C" or better in ESL032, or permission of instructor.

ESL049   3 Credits   3 Periods
General Vocational English as a Second Language
General English speaking, listening, reading, and writing skills needed for use at work. Prerequisites: Appropriate ESL placement test score, or a grade of "C" or better in ESL010, or (ESL010AA, ESL010AB, and ESL010AC), or permission of instructor.

ESL050   3 Credits   3 Periods
Review Grammar For ESL
Review of grammatical concepts for ESL (English as a Second Language) students who have some previous experience in reading and writing English. Appropriate for students who want to practice sentence skills in English. May be repeated for a total of six (6) credits. Prerequisites: Appropriate ESL course placement score, or a grade of "C" or better in ESL040, or permission of instructor.

ESL051   3 Credit   3 Periods
Pronunciation Improvement for ESL Speakers
Individualized pronunciation practice and drills for English as a second language (ESL) speakers. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL course placement score, or a grade of "C" or better in (ESL020 or ESL021 or ESL022 or RDG020), or permission of instructor.

ESL054   3 Credits   3 Periods
American Culture
Reading and writing about American culture including history, institutions and sports, and entertainment. Prerequisites: Appropriate ESL placement test score, or a grade of C or better in ESL040, or (ESL040AA, ESL040AB, and ESL040AC), or RDG040, or permission of instructor.

ESL067   3 Credits   3 Periods
Basic Writing Skills for English as a Second Language
Emphasis on basic writing skills in sentences and short paragraphs using correct, clear, and idiomatic English. Prerequisites: Appropriate English or ESL placement score, or ESL040, or ESL042, or permission of department chair.

ESL077   3 Credits   3 Periods
Language Skills: Speaking and Writing Standard English for English Language Learners
Emphasis on basic Standard English speaking and writing skills. Focus on essential idiomatic grammar in developing effective sentence-level speaking and writing strategies. Prerequisites: Appropriate English or ESL placement score or permission of department or division.

ENGLISH HUMANITIES (ENH)
ENH110   3 Credits   3Periods
Introduction to Literature
Introduction to international literature through various forms of literary expression; e.g., poetry, drama, essay, biography, autobiography, short story, and novel. Provides a global overview of literature with special emphasis on diverse cultural contributions of women, African Americans, Asian Americans, Hispanic Americans, and Native Americans. Prerequisites: None.

ENH251   3 Credits   3 Periods
Mythology
Deals with the myths and legends of civilizations with the greatest influence upon the development of the literature and culture of the English speaking people, and compares those myths with myths from other cultures. Prerequisites: None.

ENH254   3 Credits   3 Periods
Literature and Film
Presents works of literature and their film versions and analyzes distinguishing techniques of each medium. Prerequisites: ENG101, or ENG107, or equivalent.

ENH255   3 Credits   3 Periods
Contemporary U.S. Literature and Film
Strengths and weaknesses of literature and film. Challenges of adapting literature to film. Addressing racial, ethnic, gender, class and religious differences between cultures and mediums. Use of narrative in each medium and how it translates various cultural values and assumptions. Specific genres present in literature and film. Cultural metaphors and symbols used in literature and film. Prerequisites: ENG101.

ENH260   3 Credits   3 Periods
Literature of the Southwest
Investigates major themes in Southwestern American literature including the Western myth, minority roles in the region's literature, control of nature versus primacy of nature, and growth. Both prose and poetry are examined with an emphasis on contemporary Southwestern writing. Prerequisites: None.

ENH275   3 Credits   3 Periods
Modern Fiction
Includes novels and short stories of modern writers which reflect significant themes of our time. Prerequisites: None.

ENH280   3 Credits   3 Periods
Topics in American Literature
Exploration of selected topic(s) in American Literature. Focuses on a theme, genre, era, technique, or critical approach. Includes reading and interpretation of literature from a variety of cultures within the United States. Prerequisites: (ENG101 or ENG107) or permission of instructor.

ENH285   3 Credits   3 Periods
Contemporary Women Writers
Explores twentieth century literature (short stories, essays, plays, and poetry) written by women and about women. Focus on themes relevant to women's lives regardless of age, creed, or ethnic background. Prerequisites: None.

ENH291   3 Credits   3 Periods
Children's Literature
Review of folk and modern literature from a variety of world cultures, including application of literary criteria to folk and modern literature for children. Prerequisites: None.

ENH298AC   3 Credits   3 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: None.

EXERCISE SCIENCE (EXS)
EXS123   2 Credits   4 Periods
Active for Life
Uses a variety of behavior change strategies to help fit physical activity into a busy schedule. Addresses the root causes of physical inactivity and focuses on the skills needed to establish a lifelong habit of physical activity. Prerequisites: None.

EXS136   0.5 Credit   0.5 Period
Sport Psychology for the Fitness Professional
Major principles of sport psychology for fitness professionals who work with athletes and sports participants. Psychological considerations related to communication, mental training, and performance enhancement. Prerequisites: None. PED112 and PSY101 recommended.

FACILITIES SYSTEMS TECHNOLOGY (FAC)

FAC101   2 Credits   2 Periods
Refrigeration Applications and Components I
Major components of refrigeration systems. Properties of refrigerants and piping practices. Principles of pressure, work, energy, power, matter, internal energy, heat, temperature and the ideal gas processes. Saturated and superheated vapors. Pressure-enthalpy chart and its component parts, vapor compression system, cycle analysis of a single saturated cycle. Prerequisites: None. Corequisites: FAC/HVA101LL or permission of instructor

FAC101LL   1 Credit   3 Periods
Refrigeration Applications and Components I Lab
Servicing refrigeration units. Includes soldering tubing, installing/removing manifold gauge set, evacuating and charging the system. Emphasis on safety. Prerequisites: None. Corequisites: FAC/HVA101 or permission of department.

FAC104   3 Credits   3 Periods
Introduction to Facilities Management
Survey of the total responsibilities of the facilities organization in manufacturing, business, and government. Includes methods for coordinating the physical workplace with the people and work of the organization. Prerequisites: None.

FAC105   3 Credits   3 Periods
Electricity for Industry
Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of electro-mechanical power sources. Single-phase motors, motor resistance and motor terminals. Function of electromagnetic solenoids and transformers. National Electric Code. Prerequisites: None. Corequisites: ELC/FAC/HVA105LL or permission of instructor.

FAC105LL   1 Credit   3 Periods
Electricity for Industry Lab
Diagramming and assembling series circuits, parallel circuits and wiring relays, thermostats, switches and lights. Electrical readings on compressors. Emphasis on safety. Prerequisites: None. Corequisites: ELC/FAC/HVA105 or permission of instructor.

FAC106   2 Credits   2 Periods
Industrial Safety
Safety, health management and accident prevention in industrial work environment. Role of OSHA act, materials handling, electrical safety, machine safety, first response to fire and medical emergencies, safety signs and color codes, recognition of safety and health hazards, accident prevention, and management's responsibilities. Prerequisites: None.

FAC115   3 Credits   3 Periods
Motors, Controls and Wiring Diagrams
Principles of three-phase motors. Wye and Delta wiring. Calculation of motor current draw. Sequence of operation, wiring diagram and electrical components associated with industrial equipment. Procedures for evaluating electrical problems. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115LL or permission of department.

FAC115LL   1 Credit   3 Periods
Motors, Controls and Wiring Diagrams Lab
Drawing wiring diagrams, wiring systems and checking electrical circuits. Troubleshooting electrical problems of three-phase motors and controls. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115 or permission of department.

FAC186   3 Credits   5 Periods
Electro-Mechanical Devices
Concepts, principles, maintenance, and troubleshooting of mechanical and electro-mechanical devices. Mechanical alignment of shafts, pillow blocks, gears, and couplers on mechanical equipment. Bearings removal and installation. Installation and troubleshooting of pump seals. Vernier calipers, micrometers, tachometers. Use and operation of air flow hoods for air balancing. Belt drive systems and set up and operation of variable frequency drives. Cooling tower water treatment controls and chemical additives. Prerequisites: (FAC/HVA101, FAC/HVA101LL, FAC/ELC/HVA105 and FAC/ELC/HVA105LL or equivalent), or permission of instructor.

FAC191   3 Credits   3 Periods
Applied Plumbing Codes
Uniform plumbing code and plumbing systems installation requirements. Code administration as well as requirements relative to the installation and maintenance of plumbing systems. Prerequisites: None.

FAC210   3 Credits   3 Periods
Facilities Air Conditioning Systems
Fundamental principles of air conditioning including all-air, all-water (hydronic) and air-water combination systems. Overview of the physical principles, including air distribution systems and heating and cooling load calculation. System components and application theory for boilers, chillers, pumps, fans, and cooling towers. Theory and application of central air conditioning systems, air cleaning and humidification devices, pressure boosting, heat storage, expansion and pressurization equipment. Properties of water, pressure distribution in hydronic systems, flow in pipes, pressure drop/head loss, pump applications and pressurization of open and closed hydronic systems. Fundamentals of low and high temperature water systems. Prerequisites: (FAC/HVA101 and HVA112) or permission of Department or Division. Corequisites: FAC/HVA210LL or permission of Department or Division.

FAC210LL   1 Credit   3 Periods
Facilities Air Conditioning Systems Lab
Routine procedures on operational central forced-air conditioning systems and hydronic pumping systems. Components and function of large chillers, cooling towers, hot water boilers, associated piping, pumps and constant volume and variable air volume (VAV) air handlers. Perform pump sizing calculations and measurements. Perform measurements and calculations of pressure and air velocity in ducts. Apply the principles of psychometrics to central air handling systems. Evaluation of the energy balance of components and systems. Personal and equipment safety. Prerequisites: (FAC/HVA101 and HVA112), or permission of Department or Division. Corequisites: FAC/HVA210 or permission of Department or Division.

FAC215   1 Credit   1 Period
Reverse Osmosis and Deionization
Terms associated with reverse osmosis and deionization. Reverse osmosis and deionization process. Distribution of ultra-pure water, pre-treatment and waste water treatment process. Prerequisites: None.

FAC220   3 Credits   3 Periods
Controls and Instrumentation
Control theory and terminology, pneumatics, electrical, and electronic control devices, flow control devices, elementary and advanced control systems. Electric and electronic control systems, programmable logic controls, and facilities management systems. Process and terms used in instrumentation, methods of heat transfer, calculations for heat temperature, and heat transfer. Measuring and calculating pressure, fluid flow, measuring humidity, control action, and instrumentation symbols. Prerequisites: FAC/HVA210 or permission of department. Corequisites: FAC220LL or permission of department.

FAC220LL   1 Credit   3 Periods
Controls and Instrumentation Lab
Calibrating pneumatic electrical, and electronic control devices. Commissioning and troubleshooting elementary and advanced control systems. Programming and tuning direct digital control (DDC) devices. Installing, testing and calibration control and instrumentation sensors. Developing and testing sequences of operation for control loops. Recording and analyzing data from facility management systems. Prerequisites: FAC/HVA210 or permission of department. Corequisites: FAC220 or permission of department.

FAC231   3 Credits   5 Periods
Codes
Local codes, Federal Housing Administration and Urban Development standards. Acceptable building practices based on the Uniform Building Code, National Electric Code, Uniform Mechanical Code, and the Uniform Plumbing Code. Impact of American with Disabilities Act (ADA) on new and existing facilities. Prerequisites: None.

FAC235   3 Credits   3 Periods
Commercial Air and Water Test and Balance
Specific types of duct distribution systems, fans, coil types and applications. Characteristics of Heating Ventilation and Air Conditioning (HVAC) piping systems. Specific types of pumps and applications. Air and water flow measuring and control devices. Collection and analysis of data specific to air handling systems. Principles of fluid dynamics, thermal loading factors, system design, and component performance. Test and balance plans for air and water systems. Prerequisites: (FAC/HVA210, FAC/HVA210LL, FAC/HVA220, and FAC/HVA220LL), or permission of instructor. Corequisites: FAC235LL.

FAC235LL   1 Credit   3 Periods
Commercial Air and Water Test and Balance Lab
Demonstration of duct traversing and diffuser air flow measurement techniques. Water flow measurement techniques. Analysis of water side performance, hydronic balancing, and circuit setter adjustment. Chiller cooling tower and pump testing procedures. Heating, packaged units, split units, and heat pump testing procedures. Collection and analysis of air and water performance. Prerequisites: (FAC/HVA210, FAC/HVA210LL, FAC/HVA220 and FAC/HVA220LL), or permission of instructor. Corequisites: FAC235.

FAC245   3 Credits   3 Periods
Low Pressure Steam Boiler
Operational characteristics of a low pressure steam boiler, boiler design and construction, boiler fittings, feedwater, fuel, operations, and operating procedures and safety. Prerequisites: None. Corequisites: FAC245LL or permission of Instructor.

FAC245LL   1 Credit   3 Periods
Low Pressure Steam Boiler Laboratory
Operating and performing annual maintenance specified by codes for low pressure boilers. Verification of operations for low pressure boilers and corrections of any malfunctions. Prerequisites: None. Corequisites: FAC245 or permission of Instructor.

FAC250   3 Credits   3 Periods
Maintaining Biological Laboratories
Standards and guidelines for Biosafety Level (BSL 1-4) ventilation and exhaust of air. Types of filtration and control associated with the four levels of biological research laboratories. Prerequisites: Completion of Associate in Applied Science in Water Technologies degree or completion of Associate in Applied Science in Air Conditioning/Refrigeration/Facilities degree.

FOOD AND NUTRITION (FON)

FON136   1 Credit   1 Period
Nutrition During Pregnancy
Importance of nutrition during pregnancy for mother and child. Three stages of pregnancy and development of fetus. Physiological changes to include weight gain a woman experiences during pregnancy. Nutritional requirements for the development of the fetus and health of the mother. Substances and habits to be avoided during pregnancy. Pregnancy complications and deficiency disorders related to poor nutrition. Nutrition guidelines after delivery and during lactation. Prerequisites: None.

FON140BD   1 Credit   1 Period
Weight Control
Principles of and participation in weight management. Emphasis on low-fat eating, nutrition, exercise, and evaluation of weight management programs. Prerequisites: None.

FON141   3 Credits   3 Periods
Nutrition
Study of the nutrients in foods, their relationship to other nutrients, and the dietary patterns helpful in promoting health. Prerequisites: None.

FON241   3 Credits   3 Periods
Principles of Human Nutrition
Scientific principles of human nutrition. Emphasis on health promotion and concepts for conveying accurate nutrition information in a professional setting. Addresses therapeutic nutrition principles for treatment of common health conditions. Includes exploration of food sources of nutrients, basic metabolism of nutrients in the human body, relationship between diet and other lifestyle factors, use of supplements, current recommendations for food selection throughout the life cycle, and use of nutrition tools for planning food intake or assessment of nutritional status. Prerequisites: None.

GENERAL BUSINESS (GBS)

GBS107   1 Credit   1 Period
Workplace Readiness Skills
Workplace readiness skills and qualities necessary for successful employment. Prerequisites: None.

GBS110   3 Credits   3 Periods
Human Relations in Business and Industry
Exploration of fundamental theories and concepts of human relations in business and industry. Particular emphasis is placed on developing effective interpersonal relationships and leadership skills within an organization. Prerequisites: None.

GBS131   3 Credits   3Periods
Business Calculations
Review of basic arithmetic and application of mathematics to business problems, includes percentage, interest, discount, and markups. Prerequisites: None.

GBS151   3 Credits   3 Periods
Introduction to Business
Characteristics and activities of current local, national, and international business. An overview of economics, marketing, management and finance. Prerequisites. None.

GBS161   3 Credits   3 Periods
Mathematics of Business
Applications of basic financial mathematics; includes interest, financial statement, stocks and bonds, and international business. Prerequisites: GBS131, or MAT102, or permission of department/division.

GBS205   3 Credits   3 Periods
Legal, Ethical, and Regulatory Issues in Business
Legal theories, ethical issues and regulatory climate affecting business policies and decisions. Prerequisites: None.

GBS220   3 Credits   3 Periods
Quantitative Methods in Business
Business applications of quantitative optimization methods in operations management decisions. Prerequisites: (Grade of "C" or better in MAT150, or MAT151, or MAT152) or equivalent, or satisfactory score on district placement exam.

GBS221   3 Credits   3 Periods
Business Statistics
Business applications of descriptive and inferential statistics, measurement of relationships, and statistical process management. Includes the use of spreadsheet software for business statistical analysis. Prerequisites: Grade of C or better in GBS220 or MAT217.

GBS233   3 Credits   3 Periods
Business Communication
Internal and external business communications, including verbal and nonverbal techniques. Prerequisites: ENG101 or ENG107 with grade of "C" or better, or permission of department/division.

GENERAL TECHNOLOGY (GTC)

GTC090   3 Credits   3Periods
Introduction to Technology
Introduction to technology and its application to the economic development of our society. The interaction of science and technology to solve problems of the changing environment. Prerequisites: None.

GTC106   2 Credits   2 Periods
Industrial Safety
Safety, health management and accident prevention in the industrial work environment. Role of OSHA, materials handling, electrical safety, machine safety, first response to fire and medical emergencies, safety signs and color codes, recognition of safety and health hazards, accident prevention, and management's responsibilities. Prerequisites: None.

GTC107   3 Credits   3 Periods
Technical Mathematics I
Mathematical principles to include basic operations, significant digits, exponents, square roots and order of operations. Solve problems using arithmetic, signed numbers, percentages, fractions, exponents, and square root. Use of hand held calculator. Technology related problems. Prerequisites: None.

GTC108   3 Credits   3 Periods
Technical Mathematics II
A continuation of MET/GTC107. Fundamental algebraic operations. Problem solving involving metric measurement, gears, pulleys, and simple mechanism problems. Areas and volume calculations of geometric figures. Essentials of trigonometry for solving right and oblique triangles. Prerequisites: MET/GTC107 or permission of instructor.

GTC115   2 Credits   2 Periods
Electrical Drawing and Schematics
Electrical blueprint reading with emphasis on National Electrical Code. Electrical drawings, plans, schematics and wiring diagrams. Ladder and logic diagrams. Residential, multi-family, commercial and industrial drawings. Hazardous locations and specialized situation drawings. National and local electrical code application. Prerequisites: None.

GTC121   3 Credits   3 Periods
Construction Estimating I
Fundamentals of determining quantities of material, equipment and labor for given project. Includes procedures used in applying proper unit costs to these items. Prerequisites: None.

GTC133   3 Credits   3 Periods
Introduction to Microelectronics
Overview of microelectronics. Includes definition of common terms, identification of branches of microelectronics, fabrication materials/processes, and inspection/test methods. Prerequisites: None.

GTC155   3 Credits   6 Periods
Electronic Drafting and Fabrication
Introduces the electronic technician to freehand sketching and machine drawing; dimensioning and tolerancing; preparation and interpretation of electrical and mechanical schematic diagrams, wiring and ladder diagrams; and layout and fabrication of printed-wiring boards and chassis. Prerequisites or Corequisites: ELE121.

GTC181   3 Credits   6 Periods
Introduction to Fluid Power
Develops an understanding of the fundamental laws and principles of fluids together with consideration of such fluid devices as valves, cylinders, pumps, sizes of lines, and simple hookups. Includes both hydraulics and pneumatics. Prerequisites: ELE101 or equivalent.

GTC185   4 Credits   6 Periods
Electro-Mechanical Devices
Concepts, principles, maintenance, and troubleshooting of mechanical and electro-mechanical devices; mechanical alignment of shafts, pillowblocks, gears, and couplers on mechanical breadboard; transmission devices including lead screws, linkages, worm and worm wheels, gear trains, speed reducers, chain drives, and belt drives; principles of lubrication; operation of dc(direct current), ac(alternating current), and stepping motors; application of tachometers, stepping motors, linear actuators, relays, solenoids, switches, contactors, starters, and fuses; selection and specification of components from manufacturer's catalogs. Prerequisites: ELE101 or GTC108 or MAT103AA or MAT103AB or permission of instructor.

GTC191   3 Credits   3 Periods
Applied Plumbing Codes
Uniform plumbing code and plumbing systems installation requirements. Code administration as well as requirements relative to the installation and maintenance of plumbing systems. Prerequisites: None.

GTC202   3 Credits   4 Periods
Radio Frequency Energy
Theory and application of radio-frequency (RF) plasma systems for etching, sputtering and deposition operations. Troubleshooting, adjustment, and repair of plasma systems. Prerequisites: GTC133 or permission of department.

GTC204   4 Credits   4 Periods
Process Technology Overview
Overview of process technology and equipment used in manufacturing integrated circuits. Includes oxidation, diffusion, ion implantation, thin films, photolithography, etching and process/device simulation. Prerequisites: GTC133 and CHM130 and CHM130LL or permission of department.

GTC206   3 Credits   4 Periods
CNC Programming
CNC Programming of Word Address Language (G & M Code) for computer numerical control (CNC) Machine tools. 2, 3 and 4-Axis CNC Programming for CNC controlled machines. Computer based tool path verification, CNC controller tool path verification and CNC machine tool program verification. Study of tooling, Speeds, Feeds and material removal as related to CNC machine tools and CNC controlled machines. Prerequisites: MET231 or machine shop experience or permission of Program Director.

GTC207   2 Credits   2 Periods
High-Vacuum Technology
Basic theory and practice of high-vacuum systems used in microelectronics processing. Includes vacuum pumps, seals, gauges, valves, power supplies, leak-detecting equipment, and related hardware. Prerequisites: GTC133 or permission of department.

GTC214   3 Credits   5 Periods
Photo Lithography
Photo lithography techniques for production of photographic images required in the manufacture of integrated circuit chips. Includes circuit layout, mask fabrication, geometry of electrical components, properties of photoresist, process steps, surface preparation, coating, baking, exposing, developing, etching, and resist stripping. Prerequisites: GTC133 and CHM130 and CHM130LL or permission of department.

GTC215   3 Credits   5 Periods
Electronic Design Automation I
Computer-based tools for design, simulation, implementation, and testing of electronic circuits. Includes operating systems, schematic capture, simulation of combinational and sequential logic circuits, and design for test techniques. Drawing and simulating entire digital instruments. Prerequisites: (BPC102AA and BPC102BA and ELE131) or permission of department.

GTC216   3 Credits   3 Periods
Properties of Materials
Study of manufacturing properties of materials, the behavior of materials under load, stress and strain and torsion and qualities of materials other than strength. Prerequisites: None.

GTC236   3 Credits   6 Periods
CAD/CAM Computer Numerical Control (CNC) Programming
Programming of Numerical Control (NC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM), utilizing Computer Aided Drafting and Computer Aided Manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Generate programs using CAM post processor. Prerequisites: GTC/MET206.

GTC246   3 Credits   6 Periods
Advanced CAD/CAM CNC Programming
Programming of Computer Numerical Control (CNC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM) utilizing multiaxis and three dimensional graphics input. Prerequisites: GTC236.

GTC266   3 Credits   6 Periods
Solids CAD/CAM Programming
CAD/CAM modeling, CNC part production, CAD to CAM system integration and Solid Model part representation. Applies CAD/CAM in the role of (CIM) Computer Integrated Technology. Prerequisites: GTC246.

GEOLOGY (GLG)

GLG140   3 Credits   3 Periods
Introduction to Oceanography
Investigates the marine environment in terms of basic scientific concepts. Emphasizes the impact of ocean pollutants, climate fluctuations, and resources from the sea. Prerequisites: None.

HEALTH CARE EDUCATION (HCE)

HCE113   2 Credits   2 Periods
Biomedical Electronics I
Electronic concepts, electrical connections including grounding, and electrical and patient safety. Prerequisites: Admission to the

Electroneurodiagnostics Program or admission to Polysomnographic Technology Program.

HEALTH CARE RELATED (HCR)

HCR210   3 Credits   3 Periods
Clinical Health Care Ethics
An introduction to health care ethics with emphasis on analysis and ethical decision making at both the clinical and health policy levels for health care professionals. Theoretical foundation of bioethics reviewed within historical and contemporary contexts. Prerequisites: ENG102.

HCR220   3 Credits   3 Periods
Introduction to Nursing and Health Care Systems
Introduction to the social, political, and economic contexts of the nursing profession and health care systems in the United States. Prerequisites: Grade of "C" or better in ENG102 or ENG108.

HCR230   3 Credits   3 Periods
Culture and Health
Relation between cultures of diverse groups and health/illness. Emphasis on cross-cultural communication, including awareness of own cultural influences and indigenous and complementary healing practices. Prerequisites: None.

HCR240   4 Credits   4 Periods
Human Pathophysiology
Chemical, biological, biochemical, and psychological processes as a foundation for the understanding of alterations in health. The structural and functional pathophysiology of alterations in health; selected therapeutics considered. Prerequisites: BIO202 or BIO205 or equivalent.

HCR240AA   2 Credits   2 Periods
Human Pathophysiology I
Chemical, biologic, biochemical, and psychological processes as a foundation for the understanding of alterations in health. The structural and functional pathophysiology of alterations in health; selected therapeutics considered. Prerequisites: BIO202 or BIO205 or equivalent. Corequisites: HCR240AB or permission of instructor.

HCR240AB   2 Credits   2 Periods
Human Pathophysiology II
Chemical, biologic, biochemical, and psychological processes as a foundation for the understanding of alterations in health. The structural and functional pathophysiology of alterations in health; selected therapeutics considered. Prerequisites: BIO202 or BIO205 or equivalent. Corequisites: HCR240AA or permission of instructor.

HEALTH CORE CURRICULUM (HCC)

HCC109   0.5 Credit   0.5 Period
CPR for Health Care Provider
Current American Heart Association standards for one and two rescuer cardiopulmonary resuscitation (CPR) and obstructed airway procedures on the adult, infant, and pediatric victim. Use of automatic, external defibrillator and resuscitation equipment. Prerequisites: None.

HCC109AA   0.25 Credit   0.25 Period
CPR for Healthcare Providers Renewal
Renewal course for Healthcare Provider cardiopulmonary resuscitation (CPR) training. Condensed review of new American Heart Association skills and standards prior to skill testing. Skill testing includes one- and two-rescuer CPR and obstructed airway procedures on the adult, infant, and pediatric victim. Prerequisites: Current Healthcare Provider CPR card at time of course. Successful completion of the course content meets requirements for an American Heart Association (AHA) Healthcare Provider CPR renewal card.

HCC130   3 Credits   3 Periods
Fundamentals in Health Care Delivery
Overview of current health care professions including career and labor market information. Health care delivery systems, third party payers, and facility ownership. Health organization structure, patient rights and quality care. Health care and life values. Definition and importance of values, ethics, and essential behaviors in the workplace. Worker rights and responsibilities. Healthful living practices to include nutrition, stress management and exercise. Occupational Safety and Health Administration (OSHA) standard precautions and facility safety. Use of principles of body mechanics in daily living activities. Basic communication skills which facilitate team work in the health care setting. Focus on development of personal communication skills and an understanding of how effective communication skills promote team work. Focus on intercultural communication strategies. Prerequisites: None.

HCC130AA   0.5 Credit   0.5 Period
Health Care Today
Overview of current health care professions including career and labor market information. Health care delivery systems, third-party payers, and facility ownership. Health organization structure, patient rights and quality care. Prerequisites: None.

HCC130AB   0.5 Credit   0.5 Period
Workplace Behaviors in Health Care
Health care and life values. Definition and importance of values, ethics, and essential behaviors in the workplace. Worker rights and responsibilities. Prerequisites: None.

HCC130AC   0.5 Credit   0.5 Period
Personal Wellness and Safety
Introduces healthful living practices to include nutrition, stress management and exercise. Includes Occupational Safety and Health Administration (OSHA) standard precautions and facility safety. Use of principles of body mechanics in daily living activities. Prerequisites: None.

HCC130AD   0.5 Credit   0.5 Period
Communication and Teamwork in Health Care Organizations
Emphasis on basic communication skills which facilitate team work in the health care setting. Focus on development of personal communication skills and an understanding of how effective communication skills promote team work. Focus on intercultural communication strategies. Prerequisites: None.

HCC130AE   0.5 Credit   0.5 Period
Legal Issues in Health Care
Basic, legal terminology used in the health care setting. Basic legal concepts related to health care employment. Identification of ethical guidelines including client privacy and rights and ethical decision making. Prerequisites: None.

HCC130AF   0.5 Credit   0.5 Period
Decision Making in the Health Care Setting
Principles and application of the decision making. Description and application of process improvement and the relationship to the decision making model. Prerequisites: None.

HCC145   3 Credits   3 Periods
Medical Terminology for Health Care Workers
Medical terminology used in health care, with special care populations and in special services. Body systems approach to terms related to structures, functions, diseases, procedures, and diagnostic tests. Building and analyzing terms using word parts. Medical abbreviations and symbols and term spelling. Prerequisites: None.

HCC145AA   1 Credit   1 Period
Medical Terminology for Health Care Workers I
Introduction to medical terms used in health care. Body systems approach to selected terms related to structures, functions, diseases, procedures, and diagnostic tests. Building and analyzing terms using basic word parts. Selected medical abbreviations and symbols and term spelling. Prerequisites: None.

HCC145AB   1 Credit   1 Period
Medical Terminology for Health Care Workers II
Additional medical terms used in health care. Body systems approach to more detailed terms related to structures, functions, diseases, procedures, and diagnostic tests. Building and analyzing terms using standard word parts. Common abbreviations and symbols and term spelling. Prerequisites: HCC145AA.

HCC145AC   1 Credit   1 Period
Medical Terminology for Health Care Workers III
Medical terminology used with special care populations and in special services. Includes obstetric, pediatric, mental health, diagnostic imaging, oncology, and surgery terms. Use of word parts and term spelling. Prerequisites: HCC145AA and HCC145AB, or HCC146.

HCC146   2 Credits   2 Periods
Common Medical Terminology for Health Care Workers
Common medical terms used in health care. Body systems approach to terms related to structures, functions, diseases, procedures, and diagnostic tests. Building and analyzing terms using word parts. Medical abbreviations and symbols and term spelling. Prerequisites: None.

HCC160   0.25 Credit   0.25 Period
Basic Venipuncture Skills
Equipment required for specimen collection. Laboratory testing abbreviations and codes. Anatomy of the arm and hand. Venous blood collection procedure. Quality assurance measures and tests. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF), or equivalent.

HCC161   0.75 Credit   3 Periods
Basic Venipuncture Practicum
Application of fundamental phlebotomy techniques in a clinical setting. OSHA guidelines to include infection control, personal safety and first aid. Specimen handling and processing. Venous collection procedures performed on clients. Prerequisites: HCC160.

HCC164   0.5 Credit   0.5 Period
Pharmacology for Allied Health
Chemical, generic, and trade names for drugs. Use of drug references. Pharmacological principles of drugs. Routes of drug administration. Federal and Arizona regulations. Classification of drugs. Abbreviations and symbols for drug measurement, administration, and prescription. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF), or equivalent.

HCC200   0.5 Credit   1.5 Periods
Basic Client Care for Allied Health
Safety procedures for the hospitalized client. Transfer, moving and positioning techniques. Client assessment methods and procedures. Protection of airways, drains, tubes, intravenous lines, and infusion pumps. Care of patient in traction and those with limitations to movement. Gloving, gowning, and sterile procedures. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF), or equivalent.

HCC204   3 Credits   3 Periods
Clinical Pathophysiology
Causes of disease and their impact on the human body. Common physiologic effects of disease on body systems. Roles of the multidisciplinary health care team in the diagnosis and treatment of disease. Cultural implications in prevention and treatment of disease. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF), or equivalent and (BIO160 or BIO162AB, or BIO201).

HCC208   1 Credit   1 Period
Health Care Leadership
Introduction to concepts and skills required of health care leaders. Discussion of leadership styles and conflict management. Application of motivation, delegation, and communication techniques to teamwork and leadership. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF), or equivalent.

HCC218   0.5 Credit   1.5 Periods
Venous Access for Diagnostic Agents
Scope of practice and regulations governing venipuncture. Anatomy and physiology of the vascular system. OSHA guidelines. Theory and practice of basic venipuncture for diagnostic agents including equipment and procedures. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF) or equivalent, or currently licensed as a health care provider or ARRT certified.

HCC227   0.5 Credit   1.5 Periods
Venous Access for Diagnostic Agents
Scope of practice and regulations governing venipuncture. Anatomy and physiology of the vascular system. OSHA guidelines. Theory and practice of basic venipuncture for diagnostic agents including equipment

and procedures. Prerequisites: HCC130 or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF) or equivalent, or currently licensed as a health care provider or ARRT certified.

HEALTH RELATED (HLR)

HLR106   2 Credits   2 Periods
Basic Medical Terminology/Health Technicians
Study of medical terms as related to the role of health technicians. Prerequisites: None.

HLR109   1 Credit   1 Period
Careers in Health Care
Overview of the organization of health care in the United States and careers in all health related fields including dental, optometric, nursing, diagnostic, surgical, therapeutic and supportive areas. Tour of a health facility. Prerequisites: None.

HLR132   1.75 Credits   1.75 Periods
Principles of Caregiving for Direct Support Professionals: Core
Principles and application of caregiving and personal care in the various home and community based settings. Examination of legal and ethical issues, communication, activities, nutrition and food preparation, housekeeping, infection control, safety; and time and stress management for the Direct Support Professional (DSP). Prerequisites: None.

HLR133   1.25 Credits   1.25 Periods
Principles of Caregiving for Direct Support Professionals: Aging/Physical Disabilities
Principles and application of provision care in the home environment for older adults and persons with disabilities. Overview of services and continuum of care; independent living; roles and responsibilities of Direct Support Professionals (DSPs), includes legal and ethical issues, vulnerable adult abuse, reporting requirements, care plans, biological aspects of aging, physical disabilities and chronic conditions, psychological and cognitive conditions and implications for DSPs. Emphasis will be given to an overview of dementia-specific care. Prerequisites: HLR132, or permission of instructor.

HLR134   1.25 Credits   1.25 Periods
Principles of Caregiving for Direct Support Professionals: Alzheimer and Related Forms of Dementia
Principles and application of provision care in the home environment for persons with Alzheimer. Overview of services and continuum of care; independent living; roles and responsibilities of Direct Support Professionals (DSPs). Also includes legal and ethical issues, vulnerable adult abuse, reporting requirements, care plans, aspects of Alzheimer's, physical disabilities and chronic conditions, psychological and cognitive conditions and implications for DSP's. Prerequisites: HLR132, or permission of instructor.

HLR135   1.25 Credits   1.25 Periods
Principles of Caregiving for Direct Support Professionals: Developmental Disabilities
Building a foundation of knowledge for the provision and application of quality care for people with developmental disabilities by Direct Support Professionals (DSPs) or family caregivers. Examination of

philosophical, social, medical, physical, legal, and ethical issues faced by people with disabilities. Prerequisites: HLR132, or permission of instructor.

HLR170   3 Credits   3 Periods
Medical Terminology for Allied Health
Medical terminology for health care workers. Includes medical vocabulary related to human body structure, systems and disease processes. Also, diagnostic, symptomatic, clinical and surgical terms. Prerequisites: None.

HLR270   3 Credits   3 Periods
Advanced Medical Terminology
Comprehensive human anatomy and physiology medical terminology according to body systems. Terminology and abbreviations from pharmacology, surgery, psychiatry, oncology, radiology, laboratory and radiotherapy specialties. Emphasis on spelling and pronunciation. Prerequisites: Admission to the Program, or HCC140 and HCC142, or permission of the instructor.

HLR286   3 Credits   3 Periods
Women and Health: Body/Mind/Spirit/Connection
Economic, sociopolitical, and demographic factors affecting women's health. Methods for optimizing physical, emotional, and spiritual health. Specific health concerns of women throughout the lifespan. Activism for health promotion. Prerequisites: None.

HEALTH SCIENCE (HES)

HES100   3 Credits   3 Periods
Healthful Living
Health and wellness and their application to an optimal life style. Explores current topics of interest such as stress management, nutrition, fitness, and environmental health. Evaluates common risk factors associated with modern lifestyles. Prerequisites: None.

HEALTH SCIENCES EDUCATION (HSE)

HSE101   1 Credit   1 Period
Medical Billing for Practice Management
Medical office management responsibilities. Includes medical billing and reimbursement. Professional certifications and affiliations in medical billing. Medical billing terminology. Governmental regulations, review plan and penalties for fraud. Patient eligibility and benefit verification processes. Insurance contract provisions and coverages. Common reimbursement methods utilized by insurance payers. Prerequisites: Employment in a health services setting is suggested but not required, or permission of instructor.

HSE102   1 Credit   1 Period
Beginning ICD-9 Coding
Introduction to ICD-9 medical service coding. Historical overview and future application of ICD-9 coding system. Professional certifications and affiliations. Utilization responsibilities and procedures including common medical billing and symbol terminology, use of numeric system, electronic and manual insurance claims submission. Utilization compliance, fraud and abuse. Prerequisites: Employment in a health services setting is suggested but not required or permission of instructor.

HSE103   1 Credit   1 Period
Beginning CPT-4 Evaluation and Management Coding
Introduction to CPT-4 Evaluation and Management (E&M) medical service coding. Historical overview and future application of CPT-4 E&M coding system. Professional certifications and affiliations. Utilization responsibilities and procedures including common medical billing and classification terminology, use of numeric system, electronic and manual insurance claims submission. Utilization compliance, fraud and abuse. Prerequisites: Employment in a health services setting is suggested but not required or permission of instructor.

HSE104   1 Credit   1 Period
Beginning CPT-4 Surgical/Procedural Coding
Introduction to CPT-4 surgical/procedural medical service coding. Historical overview and future application of CPT-4 surgical/procedural coding system. Professional certifications and affiliations. Utilization responsibilities and procedures including common medical billing and service terminology, use of numeric system, electronic and manual insurance claims submission. Utilization compliance, fraud and abuse. Prerequisites: Employment in a health services setting is suggested but not required or permission of instructor.

HSE105   1 Credit   1 Period
Beginning Medical Chart Audit/Management
Introduction to medical chart audit/management. Emphasis on industry practices, purpose and principles of documentation, and medical charting formats/styles. Practice compliance plans and compliance officers. Management of documentation inconsistencies and omissions. Fraud and abuse issues. Prerequisites: Employment in a health services setting is suggested but not required or permission of instructor.

HSE106   2 Credits   2 Periods
Introduction to HIPAA Privacy Rule
Purpose and intent of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule. Regulation interpretation and application in the health care environment. Guidelines for development of key documents. Penalties for non-compliance. Prerequisites: Knowledge of basic operations of a medical practice or other health care environment.

HSE107   3 Credits   3 Periods
Medical Billing for Practice Management II
Expanded examination of medical office staff responsibilities related to medical service coding, billing and reimbursement. Utilization of medical billing software to organize provider information, create billing tables, and enter patient demographics, charges, and payments. Application of grievance and appeals processes. Prerequisites: Employment in a health services setting is suggested but not required, or permission of instructor.

HSE110   0.5 Credit   0.5 Period
Successful Grant Writing
Grant seeking and grant writing processes for the beginning grant writer. Pre-application preparation, application development, and grant proposal evaluation and follow-up. Includes development of grant applications for government and private funding sources. Prerequisites: None.

HSE121   1 Credit   1 Period
Medical Office Receptionist Fundamentals
Employee documentation records, professionalism, phone message assessment and management. General responsibilities of the medical office receptionist with regard to patient management and patient data management, patient appointment scheduling, medical service billing and collections activities. Certifications and affiliations for medical reception/admissions staff. Governmental regulations related to national Patient Privacy Act. Prerequisites: None.

HSE122   1 Credit   1 Period
Medical Office Referral/Authorization Coordination
Duties and responsibilities of referral/authorization staff in the medical practice setting. Patient and insurance carrier contacts and pre-certification processes. Patient data management as it relates to obtaining service approvals, medical service billing and collections activities. Certifications and affiliations in medical reception/admissions. Governmental regulations related to national Patient Privacy Act and penalties for inappropriate disclosure. Prerequisites: None.

HSE124   1 Credit   1 Period
Medical Scribe Fundamentals
Training and responsibilities of a medical scribe in the medical practice setting. Patient encounter duties to include medical service provider documentation extender and provider chaperone. Patient data management related to the complete documentation of rendered physician services. Medical terminology and diagnosis and service coding for documentation purposes. Patient chart management. Provisions and penalties of the Health Insurance Portability and Accountability Act (HIPAA). Prerequisites: None.

HSE126   1 Credit   1 Period
Medical Accounts Receivable Clerk Fundamentals
Training and responsibilities of an accounts receivable follow-up clerk in the medical practice setting. Patient data management and medical terminology as it relates to complete service billing and claim follow-up process. Accounts receivable follow-up management and the appeals process. Certifications and affiliations in medical billing and coding. Provisions and penalties of the Health Insurance Portability and Accountability Act (HIPAA). Prerequisites: None.

HSE201   3 Credits   3 Periods
Medical Coding for Specialty Areas
Advanced level medical coding and reimbursement. Privacy, security, and compliance requirements specific to medical coding. Interpretation of encounter forms and documentation of services provided. ICD-9, CPT-4 and HCPCS level two coding, medical specialty and related procedural coding. CPT-4 modifier use and other complex coding. American Academy of Professional Coders (AAPC) competency testing protocol and practice testing. Prerequisites: HCE227 or previous medical coding course work and permission of the instructor.

HSE202   2 Credits   2 Periods
Advanced Medical Service Auditing
Advanced CPT-4 E&M and service procedure coding. Examination and comparison of 1995 and 1997 documentation guidelines. Audit descriptions for components of medical service coding. Full-detail and summary audit data information and translation of audit data into summary reports. Compliance, fraud and abuse issues. Audit applications. Prerequisites: Completion of an approved advanced

medical coding course or Certified Professional Coder, or permission of instructor.

HSE203   1 Credit   1 Period
Introduction to ICD-10CM
Introduction to medical service ICD-10CM diagnostic coding. History of ICD-9CM use and developmental changes to ICD-10CM. Translation of medical diagnoses into alphanumeric system for electronic or paper claim submission to insurers. Prerequisites: Medical terminology skills and previous experience with ICD-9CM system.

HSE204   2 Credits   2 Periods
Intermediate Coding Applications
Medical service coding, billing and reimbursement issues for non-hospital based providers. Documentation guidelines. Expanded overview of medical services and their relationship to ICD-9CM and CPT-4. Data translation into numeric language for audit review. Prerequisites: Medical terminology skills and HCE227 or (two years of provider (non-hospital based) service coding experience and permission of instruction).

HEALTH SERVICE MANAGEMENT (HSM)

HSM122   3 Credits   3 Periods
Health Services Supervision
Skills and techniques for the leadership and supervision of health services employees. Emphasis placed on assertive supervision, effective human relations skills, and the enhancement of oral and written workplace communications. Prerequisites: None.

HSM125   3 Credits   3 Periods
Current Issues in Health Services Management
Overview of the inner workings of the health care industry and the forces that drive and control the delivery of health services. Explores financial, technological and human resources, regulatory systems, and national, state and local issues. Prerequisites: None.

HSM207   3 Credits   15 Periods
Health Service Management Internship
Application of leadership, supervisory and managerial skills and observation of administrative function in a specific health services setting. Prerequisites: HSM122, HSM125, HSM222, HSM226, BPC100, and one year experience in the health care field, or permission of instructor.

HSM222   3 Credits   3 Periods
Health Services Management
The role and functions of management in understanding and building organizational effectiveness. Focuses on the manager as a leader and planner capable of developing motivated and committed employees and work teams. Prerequisites: None.

HSM226   3 Credits   3 Periods
Ethics and Legalities of Health Services Management
Identification, analysis, and problem solving related to legal and ethical issues in health services management. Includes an emphasis on employment law, confidentiality issues, accurate financial reporting and personal promotional preparation. Prerequisites: None.

HEALTH UNIT COORDINATOR (HUC)

HUC110   1 Credit   1 Period
Issues in Health Unit Coordinating
History of the health unit coordinating profession, National Association of Health Unit Coordinators (NAHUC) and certification process. Management techniques for health unit coordinators. Communication issues relevant to health unit coordinators. Resume writing. Prerequisites: Prerequisites or Corequisites: HCC145 and (HCC130 or HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF). Corequisites: HUC113, HUC114, HUC115 and HUC116.

HUC111   2 Credits   4 Periods
Communication and Hospital Unit Management in Health Unit Coordinating
History of the health unit coordinating profession, National Association of Health Unit Coordinators (NAHUC) and certification process. Responsibilities of a hospital unit coordinator. Includes terminology, paper and electronic forms, electronic medical records patient charts, admission/discharge of patients, preoperative and postoperative procedures. Management techniques for health unit coordinators as workflow and process facilitators. Communication issues relevant to health unit coordinators. Prerequisites or Corequisites : HCC130, or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF). Corequisites: HUC113, HUC114, HUC115 and HUC116.

HUC113   4 Credits   4 Periods
Health Unit Coordinator Procedures
Understanding and interpreting physician's orders for the Health Unit Coordinator (HUC). Terminology and abbreviations for diagnostic procedures and treatments. Prerequisites or Corequisites: HCC130, or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE and HCC130AF). Corequisites: HUC111, HUC114, HUC115 and HUC116.

HUC114   1 Credit   3 Periods
Health Unit Coordinator Procedures - Lab
Application of unit coordinating skills and procedures in the laboratory setting. Emphasis on traditional written physician orders and paper-based charts. Prerequisites or Corequisites: HCC130, or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE, and HCC130AF). Corequisites: HUC111, HUC113, HUC115, and HUC116.

HUC115   2 Credits   12 Periods
Health Unit Coordinator Clinical
Application of health unit coordinator skills and procedures in the hospital setting under the supervision of an instructor. Prerequisites or Corequisites: HCC130, or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE, and HCC130AF). Corequisites: HUC111, HUC113, HUC114, and HUC116.

HUC116   1 Credit   1 Period
Health Unit Coordinating Clinical Seminar
Clinical guidelines and hospital requirements for health unit coordinating clinicals. Preparation for an electronic and non-electronic medical record based facility and/or unit. Review and verification of

skills, competencies and procedures listed in the Clinical Evaluation Handbook and Skills List. Preparation for National Association of Health Unit Coordinators (NAHUC) national certification exam. Resume preparation and document submission. Prerequisites or Corequisites: HCC130, or (HCC130AA, HCC130AB, HCC130AC, HCC130AD, HCC130AE, and HCC130AF). Corequisite: HUC111, HUC113, HUC114, and HUC115.

HUC259   1 Credit   1 Period
Health Unit Coordinator Review
Review of content areas on the National Unit Coordinator Examination. Includes communication, problem solving on the job, medical terminology, transcription, ethics/safety/confidentiality, admission/transfer/discharge, organization priorities and medication classification/dosages and generic names. Prerequisites: Qualified unit coordinator candidates for national certification examination.

HUC296WD   4 Credits   20 Periods
Cooperative Education
Work-college experiences that involve the combined efforts of educators and employers to accomplish an outcome related to the career objectives of the students. Prerequisites: None. Corequisites: Must be concurrently enrolled in at least one class related to job/co-op subject area; must maintain an enrollment ratio of two (2) hours of credit in other courses for every one (1) hour of Cooperative Education credit (excluding radio and television); a maximum of sixteen (16) hours of Cooperative Education credit is allowable in a college program.

HEAT AND FROST TECHNOLOGY (HFA)

HFA101   5 Credits   5 Periods
Introduction to Insulation
Insulators' union history, significance and benefits. Successful and efficient labor relations. Insulation in relation to other construction trades. Safe and proper use of hand and power tools. Safe work habits, job site safety and first aid. Advanced first aid. Occupational Safety and Health Administration (OSHA) safety training and regulations. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HFA110   5 Credits   5 Periods
Math for Heat and Frost Technology
Fundamentals of the metric system. Fundamental operations with whole numbers, common fractions, decimals, percentages and ratios and proportions. Algebraic expressions, operations, powers and roots. Compute measurements of geometric figures. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HFA115   5 Credits   5 Periods
Fundamental Insulation Skills: Piping I
Principles of insulation. Materials and methods of insulation. Insulating straight piping. Application of specific types of insulation. Insulation irregular surfaces. Seal and finish insulated pipe. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HFA150   5 Credits   5 Periods
Shop Fabrication: Layout and Pattern-making for Insulators I
Shop fabrication for the heat, frost and asbestos trades related to insulation. Draw, bisect, trisect, divide and construct geometric linear and curvilinear geometric constructions. Layout and design templates and patterns for tees, valves, flanges, and endcaps. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HFA204   2 Credits   2 Periods
Use and Care of Tools and Scaffolding
Techniques for using and caring for hand tools, portable power tools and shop machines and equipment. Learn the safe and proper erection, use, maintenance and disassembly of various types of scaffolding. Prerequisites: HFA101.

HFA215   5 Credits   5 Periods
Fundamental Insulation Skills: Piping II
Insulation for piping for cryogenic service. Insulation materials, coverings, finishes, and sealants for underground piping. Measure and cut rigid insulation using hand and table saws. Score block and board. Insulation of vertical and horizontal cylinders, finished heads and finished bodies using wired, bands, pins, stick clips, and washers. Insulate duct work in an air-handling system using fibrous board, duct wrap and flexible sheet. Prerequisites: HFA115.

HFA250   5 Credits   5 Periods
Shop Fabrication: Layout and Pattern-making for Insulators II
Shop fabrication for the heat, frost and asbestos trades related to insulation. Advanced layout patterns for long and short radius elbows, cones, bevels, and tank heads. Specifications for selecting fittings and structures. Numbers and sizes of miters and gores. Prerequisites: HFA150.

HFA260   5 Credits   5 Periods
Blueprints and Firestopping
Contents of a set of plans. Major divisions in a set of drawings and title blocks. Bidding requirements, contract forms and conditions of contract. Architect's scale. Architectural, isometric, structural, plumbing, electrical, mechanical, and ductwork drawings. Symbols and abbreviations. Heating, Ventilating, and Air Conditioning system operations. Calculate materials for insulation. Firestopping systems, materials, and installation. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HFA270   5 Credits   5 Periods
Supervision for Foremen
Foreman's role on the job site. Management and leadership using functional, adaptive and technical skills. Effective supervision and communication skills. Maslow's Motivational Theory. Short term motivators. Foreman responsibilities in area of performance and production. Traits and habits of effective leaders Leadership styles and team building. Labor/contractor cooperation. Prerequisites: Registered Apprentice status with the Heat, Frost, and Asbestos Workers Joint Apprenticeship Training Committee (JATC) or permission of the apprenticeship coordinator.

HEATING, VENTILATING AND AIR CONDITIONING (HVA)

HVA101   2 Credits   2 Periods
Refrigeration Applications and Components I
Major components of refrigeration systems. Properties of refrigerants and piping practices. Principles of pressure, work, energy, power, matter, internal energy, heat, temperature and the ideal gas processes. Saturated and superheated vapors. Pressure-enthalpy chart and its component parts, vapor compression system, cycle analysis of a single saturated cycle. Prerequisites: None. Corequisites: FAC/HVA101LL or permission of instructor

HVA101LL   1 Credit   3 Periods
Refrigeration Applications and Components I Lab
Servicing refrigeration units. Includes soldering tubing, installing/removing manifold gauge set, evacuating and charging the system. Emphasis on safety. Prerequisites: None. Corequisites: HVA101 or permission of department.

HVA103   2 Credits   2 Periods
Refrigeration Applications and Components II
Actual refrigerating cycles and pressure-enthalpy analysis of chloroflurocarbon (CFC) and hydroflurocarbon (HCFC) replacements. Selection of refrigeration components, sizing, and layouts of refrigerant piping, supermarket refrigeration system operation. Prerequisites: FAC/HVA101. Corequisites: HVA103LL.

HVA103LL   1 Credit   3 Periods
Refrigeration Applications and Components II Lab
Pressure-enthalpy evaluation of operating systems from a simple saturated cycle to actual operating conditions. System performance evaluation including evaporator superheat, adjustments of suction pressure regulators and compressor crankcase pressure regulator, and evaluation of refrigerant piping. Prerequisites: HVA101. Corequisites: HVA103.

HVA105   3 Credits   3 Periods
Electricity for Industry
Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of electro-mechanical power sources. Single-phase motors, motor resistance and motor terminals. Function of electro-magnetic solenoids and transformers. National Electric Code. Prerequisites: None. Corequisites: ELC/FAC/HVA105LL or permission of instructor.

HVA105LL   1 Credit   3 Periods
Electricity for Industry Lab
Diagramming and assembling series circuits, parallel circuits and wiring relays, thermostats, switches and lights. Electrical readings on compressors. Emphasis on safety. Prerequisites: None. Corequisites: ELC/FAC/HVA105 or permission of instructor.

HVA110   3 Credits   3 Periods
Principles of Air Conditioning
Types and styles of cooling equipment and duct systems. Methods of supplying air to spaces for heating, cooling and heating-cooling. Human comfort factors related to heating and cooling. Psychrometric terminology and applications. Velocities for specific situations. Heat pumps: their operation, controls and metering devices. Prerequisites: ELC/FAC/HVA105 or permission of department. Corequisites: FAC/HVA110LL or permission of department.

HVA110LL   1 Credit   3 Periods
Principles of Air Conditioning Lab
Application of routine procedures including identification of air conditioning components. Evaluation of energy balance. Identification of electrical malfunctions. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department. Corequisites: FAC/HVA110 or permission of department.

HVA112   3 Credits   3 Periods
Heating and Air Conditioning
Types and styles of cooling equipment and duct systems. Methods of supplying air to spaces for heating and cooling. Human comfort factors related to heating and cooling. Psychrometric terminology and applications. Operation, control, and metering devices for heat pumps and package air conditioning systems. Basic heating and ventilating equipment including performance measurement of heating and combustion equipment. Procedures used with DX cooling and gas-fired and electric heating equipment. Troubleshooting techniques, local gas and electric codes, and safety precautions. Prerequisites: HVA/ELC/FAC105. Corequisites: HVA112LL.

HVA112LL   1 Credit   3 Periods
Heating and Air Conditioning Lab
Application of routine procedures related to heating and air conditioning. Includes identification of air conditioning and heating system components, evaluation of energy balance, identification of electrical malfunctions, and proper refrigerant handling procedures. Emphasis on safety. Prerequisites: HVA/ELC/FAC105. Corequisites: HVA112.

HVA115   3 Credits   3 Periods
Motors, Controls and Wiring Diagrams
Principles of three-phase motors. Wye and Delta wiring. Calculation of motor current draw. Sequence of operation, wiring diagram and electrical components associated with industrial equipment. Procedures for evaluating electrical problems. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115LL or permission of department.

HVA115LL   1 Credit   3 Periods
Motors, Controls and Wiring Diagrams Lab
Drawing wiring diagrams, wiring systems and checking electrical circuits. Troubleshooting electrical problems of three-phase motors and controls. Safety stressed. Prerequisites: ELC/FAC/HVA105 or permission of department or ELC/FAC/HVA105LL or permission of department. Corequisites: ELC/FAC/HVA115 or permission of department.

HVA143   3 Credits   3 Periods
Load Calculation and Duct Design
Heat transmission factors calculations for specific types and combinations of construction materials. Application of design factors for cooling and heating load determination. Methods for residential applications. Design of residential and light commercial ducting systems. Calculation of duct size for constant and variable air flow, system operating characteristics and air measuring devices. Protocols to test, adjust, and balance an air distribution system. Prerequisites: None.

HVA186   3 Credits   5 Periods
Electro-Mechanical Devices
Concepts, principles, maintenance, and troubleshooting of mechanical and electro-mechanical devices. Mechanical alignment of shafts, pillow blocks, gears, and couplers on mechanical equipment. Bearings removal and installation. Installation and troubleshooting of pump seals. Vernier calipers, micrometers, tachometers. Use and operation of air flow hoods for air balancing. Belt drive systems and set up and operation of variable frequency drives. Cooling tower water treatment controls and chemical additives. Prerequisites: FAC/HVA101, FAC/HVA101LL, FAC/ELC/HVA105 and FAC/ELC/HVA105LL or equivalent, or permission of instructor.

HVA201   2 Credits   2 Periods
Electronics for Air Conditioning (HVAC&R)
Construction and operation of the positive/negative (P/N) junction. Function of rectifiers, transistors, diacs, triacs and operational amplifiers. Testing of contract current generator circuits and set level detector circuits. Prerequisites: ELC/FAC/HVA115 or permission of department. Corequisites: FAC/HVA201LL or permission of department.

HVA201LL   1 Credit   3 Periods
Electronics for Air Conditioning Lab (HVAC&R)
Diagramming and assembling electronic circuits using specific components. Testing electronic devices using volt, OHM, ammeters and the oscilloscope. Testing electronic circuits used on current production heat pumps. Prerequisites: ELC/FAC/HVA115 or permission of department. Corequisites: FAC/HVA201 or permission of department.

HVA205   3 Credits   3 Periods
Fundamentals of Hydronics
Properties of water, pressure distribution in hydronic systems, flow in pipes, pressure drop/head loss, pumps in hydronic systems and pressurization of closed hydronic systems. Pressurization of open systems and pressure boosting, heat storage, terminal users (units), automatic controls, distribution systems, expansion and pressurization equipment. Chilled water systems and low and high temperature water systems. Prerequisites: HVA112 and HVA112LL or permission of department.

HVA210   3 Credits   3 Periods
Facilities Air Conditioning Systems
Fundamental principles of air conditioning including all-air, all-water (hydronic) and air-water combination systems. Overview of the physical principles, including air distribution systems and heating and cooling load calculation. System components and application theory for boilers, chillers, pumps, fans, and cooling towers. Theory and application of central air conditioning systems, air cleaning and humidification devices, pressure boosting, heat storage, expansion and pressurization equipment. Properties of water, pressure distribution in hydronic systems, flow in pipes, pressure drop/head loss, pump applications and pressurization of open and closed hydronic systems. Fundamentals of low and high temperature water systems. Prerequisites: (FAC/HVA101 and HVA112) or permission of Department or Division. Corequisites: FAC/HVA210LL or permission of Department or Division.

HVA210LL   1 Credits   3 Periods
Facilities Air Conditioning Systems Lab
Routine procedures on operational central forced-air conditioning systems and hydronic pumping systems. Components and function of large chillers, cooling towers, hot water boilers, associated piping, pumps and constant volume and variable air volume (VAV) air handlers. Perform pump sizing calculations and measurements. Perform measurements and calculations of pressure and air velocity in ducts. Apply the principles of psychometrics to central air handling systems. Evaluation of the energy balance of components and systems. Personal and equipment safety. Prerequisites: (FAC/HVA101 and HVA112), or permission of Department or Division. Corequisites: FAC/HVA210 or permission of Department or Division.

HVA213   3 Credits   3 Periods
Controls
Control theory and terminology, pneumatics, electrical, and electronic control devices, flow control devices, elementary and advanced control systems. Electric and electronic control systems, programmable logic controls, and facilities management systems. Prerequisites: None.

HVA214   3 Credits   3 Periods
Instrumentation
Process and terms used in instrumentation, methods of heat transfer, calculations for heat temperature, and heat transfer. Measuring and calculating pressure, fluid flow, measuring humidity, control action, and instrumentation symbols. Prerequisites: None.

HVA215   1 Credit   1 Period
Reverse Osmosis and Deionization
Terms associated with reverse osmosis and deionization. Reverse osmosis and deionization process. Distribution of ultra-pure water, pre-treatment and waste water treatment process. Prerequisites: None.

HVA231   3 Credits   5 Periods
Codes
Local codes, Federal Housing Administration and Urban Development standards. Acceptable building practices based on the Uniform Building Code, National Electric Code, Uniform Mechanical Code, and the Uniform Plumbing Code. Impact of American with Disabilities Act (ADA) on new and existing facilities. Prerequisites: None.

HVA234   3 Credits   3 Periods
HVAC and Refrigeration Installation
Industry codes used by the trades. Pipe and duct installation practices. Procedure for the installation of heating, ventilation, air conditioning and refrigeration (HVAC) equipment. Calculation of roof pitch and wire size for HVAC equipment. Start-up procedures for HVAC equipment. Prerequisites: ELC/FAC/HVA115 or permission of instructor. Corequisites: HVA234LL.

HVA234LL   1 Credit   3 Periods
HVAC and Refrigeration Installation Lab
Practices and application for the installation of residential and commercial refrigeration and air conditioning equipment. Actual installation problems will be used as the basis of discussion and code application. Prerequisites: ELC/FAC/HVA115 or permission of instructor. Corequisites: HVA234.

HVA235   3 Credits   3 Periods
Refrigeration Physics
Principles of pressure, work, energy, power, matter, internal energy, heat, temperature and the ideal gas processes. Saturated and superheated vapors. Prerequisites: None.

HVA240   2 Credits   2 Periods
Psychrometrics
Composition of air, particle pressures of dry air and water vapor, terms and symbols associated with psychrometrics. Psychrometric chart, processes, calculations, mixed air conditions, and solving of actual air conditioning and refrigeration problems. Prerequisites: None.

HVA250   3 Credits   3 Periods
Design Consideration for Refrigeration
Survey of refrigeration applications and effect on product in storage. Calculate refrigeration levels, heat transfer through refrigerated walls and compressor run time. Prerequisites: None.

HVA255   3 Credits   3 Periods
System Operating Parameters
Direct expansion evaporators, types and operation. Flooded evaporators, evaporator selection, reciprocating compressor performance, and analysis of systems operation. Prerequisites: None.

HVA260   3 Credits   3 Periods
Refrigerant Piping
Sizing of refrigerant piping, location of valves, flow switches and pressure relief valves. Prerequisites: None.

HVA265   3 Credits   3 Periods
Condensers, Towers and Pumps
Condensers, operation, types and sizing. Pumps, fluid flow, water, and brine piping. Prerequisites: None.

HVA270   3 Credits   3 Periods
Refrigerants, Refrigerant Flow Control and Defrost Methods
Refrigerant characteristics, classifications and groups, emerging refrigerants, refrigerant flow controls and methods of defrosting evaporator. Prerequisites: None.

HVA280   3 Credits   3 Periods
Introduction to Ammonia Refrigeration
Thermal properties of ammonia and halocarbon refrigerants, ammonia safety and ammonia refrigeration components. Compressor capacity, lubrication systems, and piping arrangement for specific components. The effects of non-condensables. Prerequisites: None.

HVA285   3 Credits   3 Periods
Industrial Refrigeration Systems
Direct expansion and flooded evaporators, metering devices and their operational characteristics. Suction line accumulators, oil separation-control, liquid level control, surge drum and operation of ammonia refrigeration systems. Prerequisites: None.

HVA290   2 Credits   2 Periods
Compressor Maintenance
Location and installation of a compressor, measuring instruments, rebuilding procedures and compressor-motor alignment. Prerequisites: None.

HVA298AA   1 Credits   1 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

HVA298AB   2 Credits   2 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

HVA298AC   3 Credits   3 Periods
Special Projects
Organized and tailored around the interests and needs of the individual student. Structured to provide an atmosphere of individualized research and study paralleled by professional expertise and guidance. Professional-type facilities and equipment are made available for student use. Allows the best aspects of independent study and individualized learning to be combined to maximize student development. Prerequisites: Permission of program director or instructor.

HEAVY EQUIPMENT OPERATIONS (HEO)

HEO101   1 Credit   1 Period
Introduction to Heavy Equipment Operations
Basic terminology, equipment and usage. Career opportunities. Apprenticeship. Work environment. Operator qualifications and responsibilities. Safety practices. Engine types, components and operation. Record keeping. Prerequisites: Employee of Maricopa County or permission of training director.

HEO104   1 Credit   1 Period
Heavy Equipment Maintenance
Heavy equipment operator responsibilities. Manufacturers' preventive maintenance (PM) schedules and procedures. Basic equipment systems and related service and preventive maintenance, troubleshooting and inspections. Prerequisites: Employee of Maricopa County or permission of training director.

HEO106   1 Credit   1 Period
Tractors
Tractor equipment, basic tractor safety and operator safety. Preventative maintenance and basic tractor operation. Attachment processes and operation of the power-take off control (PTO). Prerequisites: Employee of Maricopa County or permission of training director.

HEO107   1 Credit   1 Period
Heavy Equipment Operations: Soils I
Basic soil types, properties, and classifications. Soil sampling and conditions, methods of stabilization and compaction, digging and ripping. Heavy equipment including excavators, bulldozers, cleats, compactors, and rollers. Prerequisites: Employee of Maricopa County or permission of training director.

HEO109   **1 Credit**   **1 Period**
Heavy Equipment Operations: Soils II
Soil characteristics. Shrinkage and swell factors and the settlement of soils. Soil measurement methods and soil density and compaction requirements. Handling requirements for soil and related materials. Prerequisites: Employee of Maricopa County or permission of training director.

HEO115   **1 Credit**   **1 Period**
Aerial Lift Truck Operation and Safety
Safety, danger and warning signs, and cautions. Equipment usage and set-up. Specific types of aerial lifts. Personal protective equipment usage. Inspection and maintenance procedures for aerial lifts. Operational procedures. Federal safety regulations: Occupational Safety and Health Association (OSHA) and American National Standards Institute (ANSI). Operator responsibilities. Prerequisites: Employee of Maricopa County or permission of training director.

HEO117   **1 Credit**   **1 Period**
Forklift Operations
Safe and proper operation of forklift. Parts and function of forklift, principles of operation, and safety precautions. Inspection procedures, proper care, and industry standards. On-hands operation of a forklift. Prerequisites: None.

HEO122   **1 Credit**   **1 Period**
Rigging Safety and Equipment
Rigging safety, equipment and inspection. Includes crane hand signals, common rope knots, types of derricks and cranes and safety procedures for rigging and moving materials and equipment. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

HEO124   **2 Credits**   **2 Periods**
Scrappers
Terminology. Parts, attachments, and controls. Scrapper uses. Safety. Preventative maintenance. Operations and work activities. Prerequisites: Employee of Maricopa County or permission of instructor.

HEO125   **1 Credit**   **1 Period**
Heavy Equipment Operations: Rollers
Basic types of rollers and their uses. Operational components, instruments, gauges, controls, and attachments. Safety guidelines and rules. Basic preventive maintenance procedures. Basic maneuvers and work activities of rollers. Prerequisites: Employee of Maricopa County or permission of training director.

HEO134   **1 Credit**   **1 Period**
Backhoe Operations
Backhoe components and operation. Includes equipment, attachments and accessories, hydraulics and backhoe controls and functions. Safety procedures and related preventative maintenance and record keeping. Basic maneuvering, production and difficult work situations. Backhoe roading considerations. Prerequisites: Employee of Maricopa County or permission of training director.

HEO135   **1 Credit**   **1 Period**
Grades
Components of roadway development and construction. Grade stakes, control, computations, and profiles. Rise, fall, and level grade calculations. Basic leveling methods and leveling equipment. Slope control and cross slopes. Prerequisites: Employee of Maricopa County or permission of training director.

HEO137   **1 Credit**   **1 Period**
Grades II
Heavy equipment terminology. Basic grading operations to include clearing and grubbing, rough and finish grading. Plan reading, profile, cross-section, and grading sheets. Conventional and electronic surveying equipment. Drainage and practices for setting grade. Prerequisites: Employee of Maricopa County or permission of training director.

HEO139   **1 Credit**   **1 Period**
All Terrain Vehicle Operation and Safety
Operation, safety and risk awareness of all terrain vehicles (ATVs). Control functions and speed selection. Turns, stops, swerves, hills, obstacles, trails, and various terrains. Scanning, Identifying, Predicting, Deciding, Executing (SIPDE) procedures. Physical and mental conditioning, alcohol, drugs and fatigue. Traveling, Respecting, Educating, Avoiding, Driving (TREAD) Lightly program. State regulations and laws. Prerequisites: Employee of Maricopa County or permission of training director.

HEO142   **1 Credit**   **1 Period**
Construction Safety/Loss Prevention
Construction safety and loss prevention from the perspective of the construction superintendent. Includes communication and motivation for safety and loss prevention, project security and traffic control, and scheduling planning to prevent losses. Also includes loss prevention documents and inventories, assigning responsibility for safety and equipment maintenance, handling inclement weather and emergencies, and government regulations and inspections. Prerequisites: None.

HEO201   **1 Credit**   **1 Period**
Introduction to Earth Moving
Earth moving fundamentals to include types, set up, and production. Loading, hauling, dumping, and backhauling. Site preparation including soils, site plans, staking out, signing, clearing and grubbing. Layout, slopes and grades, excavation, trenching, and haul roads. Drainage requirements, ground water, and stockpiles. Prerequisites: Employee of Maricopa County or permission of training director.

HEO204   **2 Credits**   **2 Periods**
Bulldozers
Trade terminology and primary uses of the bulldozer. Parts, controls, attachments, safety and preventive maintenance. Operations and basic maneuvering. Types of blades and uses. Earth moving operations. Special attachments. Prerequisites: Employee of Maricopa County or permission of Program Director.

HEO206   **2 Credits**   **2 Periods**
Front-end Loaders
Types of front-end loaders, uses, and characteristics. Controls and their functions. Safe and efficient operations. Basic preventative maintenance. Operations, maneuvering, and work activities, unstable soil. Special attachments. Prerequisites: Employee of Maricopa County or permission of training director.

HEO207   1 Credit   1 Period
Heavy Equipment Operations: Soils III
Breakthrough repair. Soil stabilization. Geotextile materials. Soil compaction. Prerequisites: Employee of Maricopa County or permission of training director.

HEO212   1 Credit   1 Period
Heavy Equipment Operations: Finish Operator
Responsibilities, skills, knowledge of the finish operator. Safety requirements and related activities. Leadership and teamwork. Production standards. Laser leveling equipment. Prerequisites: Employee of Maricopa County or permission of training director.

HEO214   1 Credit   1 Period
Heavy Equipment Operations: Excavators
Types of excavators and use. Excavator equipment, attachments, operations, and preventive maintenance. Work activities and basic safety. Prerequisites: Employee of Maricopa County or permission of the training director.

HEO216   2 Credits   2 Periods
Motor Graders
Terminology. Grader types and uses. Components and controls. Safety. Preventative maintenance. Operations and work activities. Prerequisites: Employee of Maricopa County or permission of instructor.

HEO222   1 Credit   1 Period
Heavy Equipment Operations: Finishing and Grading
Procedures for equipment check. Finishing equipment: scrapper, motor grader, articulated motor grader, rigid frame motor grader, telescoping excavator, bulldozer. Roadway specifications and materials. Techniques of finish grading. Tolerances for slopes. Subgrade and base process. Landscape finish. Prerequisites: Employee of Maricopa County or permission of training director.

HISTORY (HIS)

HIS102   3 Credits   3 Periods
History of Western Civilization 1789 to Present
Survey of the origin and development of Western civilization and its institutions from the French Revolution through the present. Prerequisites: None.

HIS103   3 Credits   3 Periods
United States History to 1865
The political, economic, and social development of the United States from the Pre-Columbian period through the end of the Civil War (1865). Prerequisites: None.

HIS104   3 Credits   3 Periods
US History 1870 to Present
The political, economic, and social development of the United States from the Reconstruction period up to the present time. Prerequisites: None.

HIS111   3 Credits   3 Periods
World History 1500 to the Present
Survey of the economic, social, cultural, and political elements of world history from 1500 to the present. Prerequisites: None.

HIS140   3 Credits   3 Periods
American Indian History
Survey of American Indian history with emphasis on the last 200 years including developments in the 20th century. Focuses on selected groups such as the Cherokee, Iroquois Confederation, Navajo, Sioux and Indians of the Southwest in relation to cultural, economic, political and social continuity and changes. Topics include development and influence of federal policies, past and present issues confronting Native Americans and how Native American individuals and communities maintain their identities as they confront social changes. Prerequisites: None.

HIS243   3 Credits   3 Periods
History of World Religions
Historical context for the development, practice and spread of various world religions. Focus on environmental factors (social, political, economic) influencing religious thought. Consideration of the changes in belief systems throughout different periods and social contexts. Prerequisites: None.

HOSPITAL CENTRAL SERVICE (HCS)

HCS101   3.5 Credits   3.5 Periods
Hospital Central Service
Central Service functions, technician roles, medical terminology, personal hygiene, decontamination, isolation techniques, quality assurance, product transport, billing methods, and communication techniques. Job application forms and techniques for effective job interviews. Includes resume writing and responding to specific job interview questions related to hospital central service placement. Prerequisites: Admission to Hospital Central Service Technology program or permission of instructor.

HCS101AA   7 Credits   13 Periods
Introduction to Hospital Central Service
Central Service functions, medical terminology, decontamination, isolation techniques, quality assurance, product transport, and billing methods. Duties and responsibilities of central service technicians. Prerequisites: Admission to Hospital Central Service Technology program or permission of instructor.

HCS101AB   0.5 Credit   0.5 Period
Job Placement Skills
Job application forms and techniques for effective job interviews. Includes resume writing and responding to specific job interview questions related to Hospital Central Service placement. Prerequisites: Admission to Hospital Central Service Technology program or permission of instructor.

HCS104AA   1 Credit   2 Periods
Basic Surgical Instrumentation for Hospital Central Service
History, anatomy and physiology of surgical instrumentation, categories, instrument set assembly, soft tissue foundation sets, general surgery instrumentation sets. Prerequisites: None.

HCS104AB   1 Credit   2 Periods
Specialty Surgical Instruments for Hospital Central Service
Identification, care, and assembly of instruments to include surgical specialty instrumentation such as plastic, gynecologic, urologic, basic bone and joint, head and neck, neurosurgery, cardiovascular and thoracic, microscopic, endoscopes, stapling guns, and robotic. Prerequisites: None.

HCS110   4 Credits   8 Periods
Packaging and Sterilization
Instrument identification and care, assembling hospital prepared supplies, safety procedures, asepsis principles, monitoring procedures, sterilizer operations, portable equipment, sterile goods, rotation and storage inventory and distribution systems. Prerequisites or Corequisites: (HCS101 or HCS101AA, HCS101AB) or permission of instructor.

HCS130   5 Credits   30 Periods
Hospital Central Service Practicum
Supervised student application of central service theory and laboratory skills. Prerequisites: HCS101 or (HCS101AA and HCS101AB) or permission of Instructor. Corequisites: HCS110.

HCS202   2 Credits   2 Periods
Hospital Central Service Certification Review
Hospital central service functions, medical terminology, decontamination, and quality assurance. Duties and responsibilities of central service technicians. Prerequisites: (CRE111 or equivalent) and HCC146.

HCS296WC   3 Credits   15 Periods
Cooperative Education
Work-college experiences that involve the combined efforts of educators and employers to accomplish an outcome related to the career objectives of the students. Prerequisites: None. Corequisites: Must be concurrently enrolled in at least one class related to job/co-op subject area; must maintain an enrollment ratio of two (2) hours of credit in other courses for every one (1) hour of Cooperative Education credit (excluding radio and television); a maximum of sixteen (16) hours of Cooperative Education credit is allowable in a college program.

HUMANITIES (HUM)

HUM101   3 Credits   3 Periods
General Humanities
A general humanities course concentrating on three great ages of outstanding human achievement: The Golden Age of Greece, the Renaissance and the 20th Century. Prerequisites: None.

HUM190   1 Credit   1 Period
Honors Forum
Interdisciplinary studies of selected issues confronting the individual and society. Formal lectures followed by informal discussions with outstanding scholars and social leaders. Supplemented by readings and pre- and post-forum discussion and critique. Varied content from module to module due to changing forum themes and issues. Prerequisites: Admission to the College Honors Program or permission of instructor.

HUM201   3 Credits   3 Periods
Humanities: Universal Themes
Origins and creation myths, the materials world, and the spiritual world as themes in the humanities. Prerequisites: None.

HUM205   3 Credits   3 Periods
Introduction to Cinema
Survey of the history and development of the art of motion pictures, including criticism of aesthetic and technical elements. Prerequisites: None.

HUM210   3 Credits   3 Periods
Contemporary Cinema
A study of contemporary films, directors and critics with emphasis on evaluating film as an art form. Prerequisites: None.

HUM250   3 Credits   3 Periods
Ideas and Values in the Humanities
An historical analysis of the interrelationships of art, architecture, literature, music, and philosophy from the early civilizations to the Renaissance, including western and non-western cultures. Prerequisites: ENG101.

HUM251   3 Credits   3 Periods
Ideas and Values in the Humanities
An historical analysis of the interrelationships of art, architecture, literature, music, and philosophy from the Renaissance to modern period, including Western and Non-Western cultures. Prerequisites: ENG101.

IMAGING CONTINUING EDUCATION (ICE)

ICE201   1 Credit   1 Period
Principles of Doppler Physics
Basic principles of Doppler ultrasound physics. Equipment, triplex imaging modalities, measurements, quality assurance, and bioeffects of diagnostic ultrasound. Prerequisites: Radiologic Technologist(RT), Registered Nurse(RN), Registered Diagnostic Cardiac Sonographer(RDCS), Registered Vascular Technologist (RVT), Registered Diagnostic Medical Sonographer (RDMS), or a physician with current license or registry eligible.

ICE203   3 Credits   5 Periods
Fundamentals of Cerebrovascular Imaging
Anatomy and physiology of the cerebrovascular system. Normal, abnormal and pathologic states of arterial anatomy. Physics related to cerebrovascular imaging. Applications of ultrasound. Prerequisites: Registered sonographers or registry eligible or permission of department.

ICE203AA   1 Credit   1 Period
Fundamentals of Cerebrovascular Imaging
Anatomy and physiology of the cerebrovascular system. Carotid artery occlusive disease and contrast arteriography. Physics and equipment related to cerebrovascular imaging. Applications of ultrasound. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of department.

ICE203AB   1 Credit   1 Period
Advanced Concepts of Cerebrovascular Imaging
Anatomy and physiology of the cerebrovascular system. Carotid artery occlusive disease, transcranial Doppler, and neonatal echocephalography. Physics and equipment related to cerebrovascular imaging. Applications of ultrasound. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of department.

ICE203AC   1 Credit   3 Periods
Cerebrovascular Imaging Lab
Application of ultrasound physical principles and physics in performing cerebrovascular procedures. Scanning protocol and techniques will be demonstrated and performed. Use of different types of vascular ultrasound equipment. Hands-on experience provided. Course may be repeated for a total of two (2) credit hours. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible or permission of department. Corequisites: ICE203AA, or ICE203AB.

ICE205   3 Credits   5 Periods
Arterial Vascular Imaging
Vascular physics and terminology. Arterial applications of ultrasound. Normal, abnormal and pathologic states of arterial anatomy. Prerequisites: Registered sonographers or registry eligible or permission of department.

ICE205AA   1 Credit   1 Period
Arterial Vascular Imaging
Anatomical and physiology of the vascular system. Normal and abnormal conditions of the arterial vascular system. Physics and equipment related to arterial vascular imaging. Patient history and physical examination data correlation with ultrasound study. Scan protocols and vascular testing results. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of department.

ICE205AB   1 Credit   1 Period
Advanced Concepts of Arterial Vascular Imaging
Anatomical and physiology of the vascular system. Normal and abnormal conditions of the arterial vascular system. Physics and equipment related to arterial vascular imaging. Patient history and physical examination data correlation with ultrasound study. Scan protocols and vascular testing results. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible or permission of instructor.

ICE205AC   1 Credit   3 Periods
Arterial Vascular Imaging Lab
Application of ultrasound physical principles and physics in performing arterial vascular procedures. Scanning protocol and techniques will be demonstrated and performed. Use of different types of vascular ultrasound equipment. Hands-on experience provided. Course may be repeated for a total of two (2) credit hours. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of department. Corequisites: ICE205AA, or ICE205AB.

ICE207   3 Credits   5 Periods
Fundamentals of Venous Imaging
Vascular physics and terminology. Venous applications of ultrasound. Normal, abnormal and pathologic states of arterial anatomy. Prerequisites: Registered sonographers or registry eligible or permission of department.

ICE207AA   1 Credit   1 Period
Fundamentals of Venous Imaging
Anatomical and physiology of the vascular system. Normal and abnormal conditions of the venous vascular system. Physics and equipment related to venous vascular imaging. Patient history and physical examination data correlation with ultrasound study. Scan protocols and vascular testing results. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible or permission of instructor.

ICE207AB   1 Credit   1 Period
Advanced Concepts of Venous Imaging
Anatomical and physiology of the vascular system. Normal and abnormal conditions of the venous vascular system. Physics and equipment related to venous vascular imaging. Patient history and physical examination data correlation with ultrasound study. Scan protocols and vascular testing results. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of instructor.

ICE207AC   1 Credit   3 Periods
Venous Imaging Lab
Application of ultrasound physical principles and physics in performing venous vascular procedures. Scanning protocol and techniques will be demonstrated and performed. Use of different types of vascular ultrasound equipment. Hands-on experience provided. Course may be repeated for a total of two (2) credit hours. Prerequisites: Registered Diagnostic Medical Sonographer (RDMS) or registry eligible, or permission of instructor. Corequisites: ICE207AA, or ICE207AB.

ICE210   3 Credits   16 Periods
Clinical Practicum
Technical and professional aspects of vascular imaging in the clinical setting. Observation, assisting and performing of various technical, clerical, professional and sonographic duties under close supervision. Prerequisites: DMS210 and permission of instructor.

ICE212   1 Credit   1 Period
Ultrasound Computer Based Review
Computer-based, ultrasound review. Physics, instrumentation, quality control, normal and abnormal sonographic anatomy. Course may be repeated for a total of three (3) credit hours. Prerequisites: Currently employed in health care setting.

ICE220   3 Credits   3 Periods
Sectional Anatomy
Sectional human anatomy in the transverse and coronal planes. Emphasis on the abdominopelvic cavity and brain. Prerequisites: BIO160 and (HCC145 or HCC146).

ICE229   2 Credits   2 Periods
Magnetic Resonance Imagery for Cross-Sectional Anatomy
Three-dimensional anatomy presented in transverse, sagittal and coronal planes of specified regions of the human body as viewed from magnetic resonance imagery. Includes structure identification of the bones, muscles, vascular system, organs, soft tissue components and weighted imaging. Prerequisites: Graduate of a related medical program of study and currently registered as a technologist in radiography, nuclear medicine, radiation therapy or sonography and ICE233. Prerequisites or Corequisites: DMI/ICE220 or permission of department or division.

ICE231   2 Credits   2 Periods
Professional and Patient Interactions
Principles of verbal and non-verbal communication skills through the development of understanding self, patients, colleagues and others. Includes verbal communication, written instructions, communications devices, telephone protocol, resume writing and job interviewing techniques. Prerequisites: None.

ICE233   1 Credit   1 Period
Fundamentals of Magnetic Resonance Imaging (MRI)
Overview of magnetic resonance imaging, program policies and student responsibilities. Includes fundamental principles of magnetic resonance imaging (MRI), primary and secondary equipment, and MRI terminology. Imaging parameters, clinical applications for MRI and preparation for physics, instrumentation, and safety coursework. Basic overview of safety issues and MRI contrast agents. Prerequisites: Graduate radiographer technologist (RT) or graduate nuclear medicine technologist. Prerequisites or Corequisites: DMI/ICE220 or permission of department.

ICE240   1 Credit   1 Period
Fundamentals of Positron Emission Tomography
Overview of Positron Emission Tomography (PET). Comparison to other diagnostic imaging modalities. History of PET, applications and importance. Introduction to PET radiation safety. Prerequisites: Completion of Associate in Applied Science in Medical Radiography or completion of Associate in Applied Science in Nuclear Medicine Technology or completion of Certificate of Completion in Radiation Therapy program. Prerequisites or Corequisites: DMI/ICE220 or permission of department or division.

ICE242   3 Credits   3 Periods
PET Physics, Instrumentation and Quality Control
Instrumentation used in Positron Emission Tomography (PET). Includes primary and secondary instruments. Theory of operation, quality control, basic principles of image fusion, and image artifacts. Prerequisites: ICE240. Prerequisites or Corequisites: DMI/ICE220 or permission of department or division.

ICE244   3 Credits   3 Periods
PET Radiopharmaceuticals, Radiation Protection and Safety
Overview of the characteristics, modes of production, types, and uses of Positron Emissions Tomography (PET) radiopharmaceuticals. Principles of basic radiation safety and handling of radioactive materials. Fundamental physical properties of the primary elements used in PET imaging, radionuclide, and radiopharmaceutical production. Basic characteristics and patterns of distribution of PET radiopharmaceuticals, dosage preparation and administration. Basic concepts of radiation safety, the "as low as reasonably achievable" (ALARA) principle, radiation monitoring, emergency procedures, and regulations. Imaging parameters, clinical applications, patient assessment, and administration of PET radiopharmaceuticals. Risks of radiation exposure and effects on the human body. Prerequisites: ICE240.

ICE246   3 Credits   3 Periods
PET Procedure Protocols
Positron Emission Tomography (PET) diagnostic procedures. Administration of radiopharmaceuticals. Administration of interventional pharmaceuticals. Imaging techniques. Prerequisites: ICE240.

ICE248   2 Credits   2 Periods
Computed Tomography (CT) Sectional Anatomy
Sectional human anatomy in the transverse and coronal planes. Emphasis on the abdominopelvic cavity and brain. Prerequisites or Corequisities: DMI/ICE220 or permission of department or division. Corequisites: ICE273.

ICE250AA   0.5 Credit   0.5 Period
Screening Mammography
Basic mammography including anatomy, positioning, equipment, patient history, clinical breast examination and film evaluation related to screening mammography. Prerequisites: Graduate radiologic technologist (A.R.R.T.) or permission of instructor.

ICE250AB   0.5 Credit   0.5 Period
Diagnostic Positioning and Special Views for Mammography
Basic mammography. Positioning for the diagnostic examination Special views, equipment characteristics, specifications, risk factors and film evaluation related to pathology. Prerequisites: ICE250AA or permission of instructor.

ICE250AC   0.5 Credit   0.5 Period
Special Mammographic Procedures
Complex mammography examinations. Breast cancer and imaging characteristics. Advanced pathology, needle biopsy, needle localization, needle aspiration and ductogram procedures, including integrating imaging modalities. Prerequisites: ICE250AB or permission of instructor.

ICE250AD   0.5 Credit   0.5 Period
Problem Solving for Mammographers
Standards Act (MQSA) requirements for mammography. Prerequisites: ICE250AC or permission of instructor.

ICE250AE   0.5 Credit   0.5 Period
Routine Mammography Positioning
Basic mammography positioning laboratory experience. Breast self-examination. Positioning and equipment used for screening and diagnostic mammography procedures. Evaluation of positioning techniques. Prerequisites: ICE250AA and ICE250AB, or Mammographer, or permission of instructor.

ICE253   1 Credit   1 Period
Quality Management Seminar
Competencies and procedures for quality management in mammography. Physical principles of radiographic and mammographic quality control. Concepts and principles of quality improvement. Collection and analysis of quality improvement data. Quality improvement standards and principles for mammography and radiography. Prerequisites: Graduate Radiologic Technologist (ARRT), or permission of instructor.

ICE254   1 Credit   6 Periods
Advanced Imaging Practicum
Advanced imaging procedures for the Graduate Radiologic Technologist (ARRT) performed under strict supervision. Use of correct technical and positioning techniques. Apply safety measures and procedures established by the institution and college. Observe ethical and legal guidelines and use of effective communication skills. May be repeated for a total of ten (10) credit hours. Prerequisites: Graduated American Registry of Radiologic Technologist (ARRT), or permission of instructor and acceptance by sponsoring clinical institution. Corequisites: ICE291, or ICE292.

ICE255AA   1 Credit   1 Period
Advanced Mammography Imaging Technology
Digital and computed breast imaging equipment. Use and purpose of double checking devices. Alternative imaging procedures to include

ultrasound, magnetic resonance imaging (MRI), computed tomography (CT), and nuclear medicine imaging. Best imaging modality in demonstrating specific types of pathology. Prerequisites: ICE250AC, or currently practicing as a mammographer.

ICE255AB   0.5 Credit   0.5 Period
Stereotactic Biopsy
Stereotactic biopsy examinations. Imaging design and geometry of equipment. Quality control for biopsy equipment. Principles of stereotactic localization. Pathology correlation. Prerequisites: ICE250AC, or currently practicing as a mammographer.

ICE255AC   1 Credit   1 Period
Advanced Quality Assurance for Mammography
Quality assessment program for mammography involving the evaluation of the equipment, imaging and image processing. Ability to categorize unacceptable mammography images. Basic clinical audit for accreditation purposes. Prerequisites: ICE250AD, or currently practicing as a mammographer.

ICE263   3 Credits   3 Periods
Physics and Instrumentation of Computed Tomography
Overview of the history, computerized data, acquisition and design of equipment as it relates to image reconstruction and image quality in Computed Tomography (CT). Includes quality assurance, radiation dose and data, and management principles. Prerequisites: American Registry of Radiologic Technologists (ARRT) or graduate of an accredited medical radiography program. Prerequisites or Corequisites: DMI/ICE220 or permission of department or division.

ICE264   3 Credits   3 Periods
MRI Physics, Instrumentation and Safety
An overview into the physics, equipment, physical design, and image characteristics of Magnetic Resonance Imaging (MRI) systems. Prerequisites: Graduate radiologic technologist (A.R.R.T.), graduate Nuclear Medicine Technologist, or permission of instructor and ICE233. Prerequisites or Corequisites: DMI/ICE220 or permission of department or division.

ICE265   3 Credits   3 Periods
Computed Tomography Procedure Protocols
Common procedure protocols for Computed Tomography (CT) imaging. Includes patient preparation, choosing protocols, interventional procedures, scan parameters, contrast indicators, post-exam processing and quality issues and adapting to atypical situations. Prerequisites: American Registry of Radiologic Technologists (ARRT) or graduate of an accredited medical radiography program and ICE263.

ICE266   3 Credits   3 Periods
Magnetic Resonance/Computerized Tomography Pathology Imaging
An overview into the applications, pathology, technical factors, correlation and financial implications of Magnetic Resonance (MR) and Computerized Tomography (CT) imaging. Designed for graduate radiologic technologists who wish to expand their knowledge of Magnetic Resonance and Computerized Tomography Imaging. Prerequisites: ICE263 and ICE264 or graduate radiologic technologist (A.R.R.T.) or permission of instructor.

ICE267   1 Credit   1 Period
Computerized Tomography Pathology Imaging
Clinical applications and technical factors related to Computerized Tomography (CT) imaging. Specific types of pathology, their appearances, and signs as presented on a CT image. Advantages and disadvantages in the use of CT for specific types of pathology. Current research and advances in CT imaging. Prerequisites: Graduate radiologic technologist (A.R.R.T.) or permission of instructor.

ICE268   1 Credit   1 Period
Magnetic Resonance Pathology
Clinical applications and technical factors specific to Magnetic Resonance Imaging (MRI). Types of pathology, their appearances, and signs as presented on a MR image. Advantages and disadvantages in the use of MR imaging for the demonstration of specific types of pathology. Prerequisites: Graduate radiologic technologist (A.R.R.T.) or permission of instructor.

ICE269   3 Credits   3 Periods
Magnetic Resonance Procedure Protocols
Imaging techniques related to the central nervous system (CNS), neck, thorax, musculoskeletal system and abdominopelvic regions. Specific clinical application, available coils and use. Considerations in scan sequences, specific choices in protocols including slice thickness, phase direction, flow compensation, and positioning criteria. Anatomical structures and plane that best demonstrates anatomy. Signal characteristics of normal and abnormal structures. Prerequisites: Graduate registered radiographic technologist (RT), nuclear medicine technologist or radiation therapist and (ICE229, ICE233, and ICE264). Prerequisites or Corequisites: DMI/ICE220 or permission of Department or Division.

ICE270   0.5 Credit   0.5 Period
Contrast Media
Functions and applications of contrast media used in diagnostic radiographic imaging procedures. Chemical characteristics and properties of contrast media. Indications and contraindications including potential hazards of contrast media administration. Adverse reactions, patient care associated with reactions and medicolegal issues associated with administration of contrast media. Prerequisites: Graduate radiologic technologist or permission of instructor.

ICE271   0.5 Credit   0.5 Period
Physiologic Monitoring
Physiologic monitoring to include electrophysiology of the heart, electrocardiography, rhythms and dysrhythmias. Hemodynamic monitoring including equipment, parameters and cardiovascular pressures. Vital signs to include normal and abnormal values. Prerequisites: Graduate radiologic technologist or permission of instructor.

ICE272   3 Credits   3 Periods
Magnetic Resonance Pathology and Contrast
Common pathologies found in magnetic resonance imaging, their appearance with various imaging protocols including all commonly imaged body systems and areas. Case studies and images of the pathologies to reinforce the lectures. Prerequisites: Graduate registered radiographic technologist (RT), or nuclear medicine technologist, or radiation therapist and (ICE229 and ICE233). Prerequisites or Corequisites: DMI220, or permission of department or division.

ICE273   3 Credits   3 Periods
Computed Tomography Pathology and Contrast
Common diseases diagnosed using Computed Tomography (CT). Disease or trauma process from its description, etiology, associated symptoms, and diagnosis with appearance on CT. Case studies and images of the pathologies. Prerequisites: DMI220, or permission of instructor. Corequisites: ICE248.

ICE281   1.5 Credits   1.5 Periods
Nuclear Medicine PET I
Positron emission tomography (PET). Basic principles of operation and design of positron imaging systems. Positron coincidence detection and positron imaging using gamma camera and high energy collimators. Production and characteristics of positron emitters. Prerequisites: DMI251 or certified nuclear medicine technologist or permission of Nuclear Medicine Technology program director.

ICE283   1.5 Credits   1.5 Periods
Nuclear Medicine PET II
Diagnostic testing using positron emission tomography (PET). Radiopharmaceuticals for PET imaging. Patient preparation, procedures and processing in PET studies. Prerequisites: DMI251 or certified nuclear medicine technologist or permission of Nuclear Medicine Technology program director.

ICE290   1 Credit   1 Period
Registry and Board Examinations Preparation
Preparation for the American Registry of Radiologic Technologist (ARRT) and the Medical Radiologic Technology Board of Examiners (MRTBE) examinations. Review of the ARRT and MRTBE content specifications, techniques for preparation and review of current literature. Prerequisites: Qualified individuals preparing for the ARRT and MRTBE, or permission of department.

ICE291   1 Credit   1 Period
Computed Tomography Registry and Board Exam Preparation
Discussion of concepts outlined in the American Registry of Radiologic Technologists (ARRT) published content specifications for their post-primary certification exam in computed tomography (CT). Prerequisites: DMI220, ICE248, ICE263, ICE265, and ICE273. Corequisites: ICE254.

ICE292   1 Credit   1 Period
MRI Board Exam Review Preparation
Preparation for the American Registry of Radiologic Technologists (ARRT) Medical Resonance Imaging (MRI) examination. Review of elements required to pass the AART examination, including patient care and safety, imaging procedures, data acquisition, and physical principles of image formation. Prerequisites: DMI220, ICE229, ICE233, ICE264, ICE269, and ICE272. Corequisites: ICE254.

INDEPENDENT ELECTRICAL CONTRACTORS (IEC)

IEC101   5 Credits   5 Periods
Basic Electricity
Electrical and first aid safety. Introduction to electricity, trade math, wiring techniques. Introduction to the National Electrical Code. Prerequisites: None.

IEC102   5 Credits   5 Periods
Electrical Residential
Series-parallel circuits, governing bodies, residential wiring practices, Kirchhoff's Law, kitchen outlets, heating systems, low voltage systems, service entrance requirements and swimming pools. Prerequisites: IEC101 or permission of instructor.

IEC103   5 Credits   5 Periods
Electrical A/C and D/C
Trigonometric and vector math, alternating current theory, inductance and transformer theory. Three phase, generators and single and three phase motor theory. Prerequisites: EC102 or permission of instructor.

IEC104   5 Credits   5 Periods
Wiring Motors and Transformers
Sizes of wire, conduit and boxes; National Electric Code, sizing service and feeders, sizing transformers and protection of transformers. Prerequisites: IEC103 or permission of instructor.

IEC105   5 Credits   5 Periods
Electric Blueprint Reading
Three-phase systems, transformers, and blueprint reading, construction process, plumbing, masonry and welding blueprints as well as mechanical systems; electrical blueprint an grounding. Prerequisites: IEC104 or permission of instructor.

IEC106   5 Credits   5 Periods
Electric Motor Controls
Motor Control system, alternating current (AC) and direct current (DC) contactors and magnetic motor starters; time delay circuits, reversing circuits, power distribution systems and hazardous locations, signs and fiber optics. Prerequisites: IEC105 or permission of instructor.

IEC107   5 Credits   5 Periods
Electronics and Controls
Electronic components, electromechanical and electronic relays. Photoelectric and proximity controls, logic- programmable controllers, reduces voltage starters, starting direct current motors, and interpretation of electronics components. Prerequisites: IEC106 or permission of instructor.

IEC108   5 Credits   5 Periods
Alarm Systems and Codes
Fire and signaling systems. Installation and start-up of fire alarm system, fire alarm maintenance and troubleshooting. Wiring methods and materials, circuits and equipment protection, motors and air conditioning circuits, transformers and generating. Dwelling occupancies, industrial and commercial location, hazardous locations-swimming pool and leadership. Prerequisites: IEC107 or permission of instructor.

IEC200   2 Credits   2 Periods
PEP: Electrical Theory
Basic electricity and installation requirements. Ohm's Law, National Electrical Code standards, static electricity and magnetism. Resistors and series circuits, combination circuits, outside branch circuits and feeders. Calculations of parallel, branch, feeder and service circuits for Professional Electrician Program (PEP). Prerequisites: Five years of electrical experience and permission of Independent Electrical Contractors, Inc. (IECA).

IEC201   2 Credits   2 Periods
PEP: Electrical Theory - Instruments
Measuring instruments and electrical readings. Small sources of electricity, alternating/direct current and properties of inductance. Emphasis on National Electrical Code, Articles 230-399 for Professional Electrician Program (PEP). Prerequisites: Five years of electrical experience and permission of Independent Electrical Contractors, Inc. (IECA).

IEC202   2 Credits   2 Periods
PEP: Electrical Theory - Circuits
Properties of electrical circuits. Alternating current circuits containing inductance, capacitance, resistance-inductance-capacitance and three-phase power for Professional Electrician Program (PEP). Prerequisites: Five years of electrical experience and permission of Independent Electrical Contractors, Inc. (IECA).

IEC203   2 Credits   2 Periods
PEP: Electrical Theory Transformers
Principles of transformers and electrical machines. Components, operation, and function of selected types of transformers, generators and motors for Professional Electrician Program (PEP). Prerequisites: Five years of electrical experience and permission of Independent Electrical Contractors, Inc. (IECA).

IEC206   2 Credits   2 Periods
PEP: Motor Controls I
Electrical quantities, voltage, currents, resistance, power in circuits, Ohm's Law, power formulas and series circuits for Professional Electrician Program (PEP). Safe and proper use of hand and power tools, instruments, and equipment. Trade language. Alternating current/direct current (AC/DC) contactors, magnetic motor starters, and motor starters. Magnetism, voltage variation, and solenoid selection and application. Complex wiring diagrams, control circuits. Application and installation of control devices. Prerequisites: Five years of electrical experience and permission from the Independent Electrical Contractors Association (IECA).

INDUSTRY (IND)

IND133   3 Credits   3 Periods
Speaking in Business
Practical, effective speech techniques for everyday business interactions. Listening skills and stages of and barriers to the perception process. Examination of effective message preparation skills and communication styles and techniques. Interaction emphasizing conflict management and resolution in oral communication. Prerequisites: None.

IND134   3 Credits   3 Periods
Construction Core I
Causes, prevention and response for on-the-job accidents. Personnel protection for specific types of work place hazards. Prevention and response for electrical hazards and fire. Rigging equipment inspection and use. Lifting and moving equipment. Types of cranes and crane hand signals. Safety precautions for rigging and moving materials. Blueprint features and care. Safe and proper use of hand and power construction tools. Mathematical applications using English and metric units. Prerequisites: None.

IND135   1 Credit   1 Period
Interpersonal Skills and Leadership in Construction
Values and expectations of the workforce, building relationships, satisfying stakeholders. Effective communication, management grid, creating a leadership environment. Behavioral interviewing and professional development of personnel. Prerequisites: None.

IND136   1 Credit   1 Period
Communications in Construction
Communication in the construction industry. Positive direct communication, written communication, active listening, understanding, negotiation, and dealing with difficult people. Communication skills at all organizational levels, with groups, combining oral and written communication for maximum effectiveness. Prerequisites: None.

IND137   1 Credit   1 Period
Issues and Resolutions
Negotiating techniques and tools, nonverbal signals, conflict resolution strategies. Symptoms and barriers to resolving problems, applying problem-solving techniques, brainstorming and root cause identification. Prerequisites: None.

IND138   1 Credit   1 Period
Introduction to Project Management and Resource Control
Technical and management skills such as preconstruction planning, cost and risk control and policy development. Criteria for project layout purchasing, subcontractor management, project layout. Preparation process for project start up, close out and alternate project delivery methods. Major factors which affect production control and production control standards. Project manager's role. Prerequisites: None.

IND139   1 Credit   1 Period
Construction Documents
Importance and types of documents, drawings and specifications. Methods of obtaining work in the industry and types of contracts and insurance requirements. Change order process and close out documents. Prerequisites: None.

IND140   1 Credit   1 Period
Construction Scheduling and Time Management
Fundamental training in scheduling, including listing and sequencing, bar charts, network diagrams and methods of managing resources. Importance of formal schedules, job planning, and establishing priorities and alternative scheduling methods. Prerequisites: None.

IND141   1 Credit   1 Period
Estimating and Cost Control
Accurate estimating, estimating process and steps in development of estimate. Cost control methodology, cost analysis and project manager's role in controlling cost and tracking rework cost. Prerequisites: None.

IND142   1 Credit   1 Period
Construction Safety/Loss Prevention
Construction safety and loss prevention from the perspective of the construction superintendent. Includes communication and motivation for safety and loss prevention, project security and traffic control, and scheduling planning to prevent losses. Also includes loss prevention documents and inventories, assigning responsibility for safety and equipment maintenance, handling inclement weather and emergencies, and government regulations and inspections. Prerequisites: None.

IND143   1 Credit   1 Period
Construction Law
Construction law, including general legal relationships and the meaning of frequently used contract clauses; emphasis on the superintendent's role in documenting and negotiating for changes and claims on construction contracts. Prerequisites: None.

IND144   1 Credit   1 Period
Improving Construction Productivity
Techniques for improving the productivity of construction projects including external factors influencing productivity, planning and communications as functions of a productive project, and the relationship of motivation and job satisfaction to productivity. Also presents techniques for evaluating methods improvement, including the use of time lapse photography and development of a methods improvement program, time management and delegating responsibility. Prerequisites: None.

IND145   1.5 Credits   1.5 Periods
Sustainable Construction Supervisor
Sustainable construction management and green building practices, Leadership in Energy and Environmental Design (LEED) rating system applied to oversight of projects and crews. Supervision of subcontractors and crews related to accumulation and importance of LEED points. Prerequisites: None.

IND150   Credits   2 Periods
Construction Foreman
Examine the basic supervisory and leadership concepts and skills needed to manage a construction project. Includes basic theories of motivation, role of communications in construction project management,decision making process, planning and organizing, strategies, developing production schedules to control production, discussing accident prevention and loss control. Prerequisites: None.

IND151   4.5 Credits   4.5 Periods
Electrical Level I
Introduction to National Electric Code. Electrical safety. Hand bending, cutting and measuring of conduit. Installation and applications of specific fasteners. Basic concepts of electricity, alternating current flow and voltage. Operation of electrical test equipment to measure properties. Installation procedures for raceways, wireways and cable trays. Take and interpret readings from test equipment. Installation and use of specific conductors and cables. Interpretation of electrical diagrams. Select wiring devices and techniques for commercial, industrial, and residential wiring. Prerequisites: None.

INFORMATION TECHNOLOGY SECURITY (ITS)

ITS100   1 Credit   2 Periods
Information Security Awareness
Computer and network security topics, including network communication. Includes security policy, implementation of basic security measures, the importance of backups and the value of protecting intellectual property. Real-life examples and practical projects to reinforce the need for computer security. Prerequisites: None.

ITS110   4 Credits   5 Periods
Information Security Fundamentals
Fundamental concepts of information technology security. Topics include authentication methods, access control, cryptography, Public Key Infrastructure (PKI), network attack and defense methods, hardening of operating systems and network devices, securing remote access and wireless technologies and securing infrastructures and topologies. Emphasis on hands-on labs in both the Windows and Linux environments. Builds on thorough understanding of Transmission Control Protocol/Internet Protocol (TCP/IP) and security concepts and Microsoft (MS) Windows and Linux Administration. Prerequisites: (CIS126DA or CIS126DL) and (CNT150 and MST150DA or MST150XP), or permission of instructor.

ITS120   3 Credits   3 Periods
Legal, Ethical and Regulatory Issues in Information Security
Exploration of legal and ethical issues unique to information security. Analysis of professional ethical codes and their application to information security practitioners. Federal and state laws as they relate to information security. Prerequisites: ITS110 or permission of instructor.

ITS130   3 Credits   4 Periods
Operating System Security
In-depth examination of operating system security including Transmission Control Protocol/ Data Encryption Standard (DES), Triple Data Encryption Standard (3DES), Advanced Encryption Standard (AES), Pretty Good Privacy (PGP), and other encryption technologies (TCP/IP), Internet Protocol Security (IPSec) and Cisco Internetwork Operating System (IOS), Microsoft Windows, Linux and Mac OSX Security. Procedures to defend networks against attacks and recovery from network disasters. Web server security. Emphasis on hands-on labs in both the Windows and Linux environments. Builds on thorough understanding of Transmission Control Protocol/Internet Protocol (TCP/IP) and security concepts and MS Windows and Linux Administration. Prerequisites: ITS110 or permission of instructor.

ITS140   3 Credits   4 Periods
Network Security
Examination of techniques used to defend network security. Design and implementation of devices including firewalls and Intrusion Detection Systems (IDSs) and Virtual Private Networks (VPNs). Risk analysis and security policies methodologies. Emphasis on hands-on labs in both the Windows and Linux environments. Builds on thorough understanding of Transmission Control Protocol/Internet Protocol (TCP/IP) and security concepts and MS Windows and Linux Administration. Prerequisites: (ITS110 and ITS130), or permission of instructor.

ITS150   3 Credits   4 Periods
Building Trusted Networks in the Enterprise
Design of a trusted network to secure electronic transactions. Techniques to secure electronic transactions to include cryptography, digital signatures, digital certificates and strong authentication. Computer forensics techniques and legislative issues. Emphasis on hands-on labs in both the Windows and Linux environments. Builds on thorough understanding of Transmission Control Protocol/Internet Protocol (TCP/IP) and security concepts and MS Windows and Linux Administration. Prerequisites: ITS110, ITS130 and ITS140, or permission of instructor.

ITS160   3 Credits   4 Periods
Managing Trusted Networks in the Enterprise
Establishment of trusted networks to ensure enterprise security. Techniques for the planning and implementation of trusted networks including secure Wireless LANs (WLANs) and secure email. Emphasis on hands-on labs in both the Windows and Linux environments. Builds on thorough understanding of Transmission Control Protocol/Internet Protocol (TCP/IP) and security concepts and MS Windows and Linux Administration. Prerequisites: ITS110, ITS130, ITS140 and ITS150 or permission of instructor.

ITS170   1 Credit   1 Period
Information Security Policy Development
Components required to plan, develop and write information security policies. Policy development processes and the relationship between security and policy directions. Emphasis on writing effective information security policies in a governmental or corporate setting. Prerequisites: None.

ITS171   1 Credit   1 Period
Information Security Risk Management
Examination and assessment of risk management in an information technology environment. Identification and valuation of organizational assets. Risk identification to include types of threats and exposures to loss. Risk mitigation techniques, documentation methods and regulatory requirements. Prerequisites: ITS110.

ITS172   1 Credit   2 Periods
Viruses and Other Malicious Software
Spyware, adware, viruses, worms and trojans. Available tools for identifying and removing malicious software. Techniques for analyzing the behavior of malicious software. Methods of infection and prevention of infection. Prerequisites: None.

INFORMATION STUDIES (IFS)
IFS101   3 Credits   3 Periods
Information Skills in the Digital Age
Development of skills and competency in accessing, evaluating and using information resources while examining the social and historical context, as well as the technological implications of the use and organization of information. Prerequisite: ENG101, or ENG107, or equivalent.

INTERDISCIPLINARY STUDIES (ISS)
ISS111   4 Credits   6 Periods
Integrated Science I
Interdisciplinary study of Biology, Chemistry, Earth Science, Astronomy, and Physics. Emphasis on methods of scientific inquiry. Covers the interrelationship between the fundamentals of matter and energy and those of biological and physical systems. Prerequisites: None.

INTERNATIONAL BUSINESS (IBS)
IBS102   2 Credits   2 Periods
International Marketing
Focuses on how to plan and implement international marketing strategies through application of several concepts: international marketing research; market evaluation; cultural, economic, and political environments; product, price, promotion and distribution strategies; and implementation. Prerequisites: None.

IRONWORKING (IRW)
IRW101   3 Credits   3 Periods
Ironworking I: Trade Science
Overview of the American labor movement. Tools, rigging, and structural steel erection. Principles of oxyacetylene and arc welding, use of rebar. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW102   3 Credits   3 Periods
Ironworking II: Basics
Overview of general safety, blueprint reading and basic mathematics. Rights and responsibilities imposed by the Occupational Safety and Health Act (OSHA). Basic blueprint reading, installation of conveyer headers, customary and metric units of measurement. Computation and conversion of whole numbers, fractions, decimals and use of measuring tools. Prerequisites: (Registered apprentice status and IRW101) or permission of the apprenticeship coordinator.

IRW103   6 Credits   6 Periods
Science, Rigging and Hoisting
Science and mechanics related to the plumbing trade. Properties of water and matter, hydraulic and pneumatic mechanics, metals and alloys. Corrosion. Rigging procedures including the use of fiber and wire rope for knots, hitches and slings. Use of hoisting equipment and cranes. Hoisting with helicopters. Safe and proper loading and unloading of hoisting equipment. Intermediate fitting projects and mathematical applications. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW105   3 Credits   3 Periods
Ironworking III: History
Historical factors, events and activities leading to the founding of the International Ironworkers Labor Union. Circumstances and events between 1906-1912 related to labor unionization. Conspiracy trials involving unionization of Ironworkers, Carpenters, Machinists and the Building Trades. World War II and postwar struggles related to the labor movement. Factors of labor movement growth. The Occupational Health and Safety Administration (OSHA), nuclear power, foreign production of steel, and political influences relating to unionization in the 21st Century. Prerequisites: None.

IRW120   3 Credits   4 Periods
Structural Steel Erection I
Aspects of erecting structural steel including history of iron and steel, plans and drawings, preparing materials, selecting a raising gang, erection of components, fastenings components and detailing. Prerequisites: Apprentice status.

IRW121   3 Credits   4 Periods
Structural Steel Erection II
Tools, equipment and trade procedures. Advanced structural steel welding and burning. Mobile and tower cranes. Bolted, riveted and pinned connections. Bar joists, and bridging. Detailing stairways, ladders, channel bucks and grating. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW130   3 Credits   4 Periods
Reinforcing I: Rebar
Reinforced concrete; manufacture of reinforcing steel; tools, ties, and safety; types of reinforcing used in building construction; bridge construction; purpose and location of reinforcing steel in concrete; fabricating, unloading, handling, and storing, reinforcing steel, reading engineering and placing drawings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW131   3 Credits   4 Periods
Reinforcing II: Post Tension
Wire application, bars, superstructure and substructure, wall and column reinforcing, beams, girders, slabs, joists, stairs, bins, tanks, and grain elevators. Highway structures. Airport and highway pavement. Bar and weld splicing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW150   3 Credits   4 Periods
Rigging I
Rigging history, principles and blocks. Rigging safety. Fabric and wire rope, steal chain, sockets, slings, rigging hardware. Slicing techniques. Reeving systems and personnel requirements. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW151   3 Credits   3 Periods
Rigging II
Safety rules and information for operation of rigging equipment; operation and assembly of cranes; examples of rigging jobs; use of helicopters in construction; miscellaneous rigging equipment; skids and rollers; access structures. Prerequisites: IRW150 and apprentice status, or permission of the apprenticeship coordinator.

IRW160   3 Credits   4 Periods
Architectural Ironworking I
Tools, subframing and steel supports, stairs, fire escapes, ladders, railings, fences, partitions, doors, fire doors, elevators, flagpoles, playground equipment and swimming pool equipment. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

IRW161   3 Credits   4 Periods
Architectural Ironworking II
Doorway, wall, vault, and building accessory installation; care and maintenance of aluminum, bronze and stainless steel construction materials. Prerequisites: IRW160 and registered apprentice status or permission of the apprenticeship coordinator.

IRW180   3 Credits   4 Periods
Light Industrial: Precast/Metal Building
Beginning information and steps for the erection of a pre-engineered building. Includes various types of architectural design, reading blueprints and instruction manuals, and layout procedures for a building. Prerequisites: Apprentice status.

LEADERSHIP (LRS)
LRS105   1 Credit   1 Period
Leadership for Citizenship
Characteristics and types of leaders, responsibilities of leadership, and ethics of leadership as related to citizenship. Prerequisites: None.

LEGAL ASSISTING (LAS)
LAS101   3 Credits   3 Periods
Introduction to Law
Legal terminology and basic legal principles in the areas of tort, contract, and criminal law. Interrelationships among lawyers, the court system, and law enforcement and administrative agencies. Development of a case for trial, adjudication, and post-verdict procedures in the civil and criminal systems. Prerequisites: None. Suggested but not required: ENG101 and CRE101, or exemption by score on the reading placement test (ASSET).

LIBRARY SCIENCE (LBS)
LBS101   2 Credits   2 Periods
Library Resource Concepts and Skills
Information access skills for print and electronic resources. Use of libraries and their structure, tools, and staff to identify, locate, evaluate and make effective and ethical use of information. Emphasizes critical thinking skills. Prerequisites: None.

LBS201   1 Credit   1 Period
Electronic Resources Concepts and Skills
Use of computers to access electronic databases and to process search results. Includes search concepts and strategies, evaluating search results, and bibliographic citing of electronic sources. Prerequisites: None.

MANAGEMENT (MGT)
MGT100   0.5 Credit   0.5 Period
Fundamentals of Supervision
Five functions of management to include planning, staffing, directing, organizing and controlling. Specific roles and responsibilities of the supervisor. Application of leadership and worker styles in addressing on-the-job situations. Strategies for handling work related conflicts. Prerequisites: None.

MGT101   3 Credits   3 Periods
Techniques of Supervision
Overview of the foundations of supervision and how to get things done within an organization through other people. The functions of planning, organizing, staffing, motivating and controlling are presented. Prerequisites: None.

MGT101AA   1 Credit   1 Period
Techniques of Supervision I
Foundations of supervision and leadership with an emphasis on the supervisory functions of communication and motivation. Prerequisites: None.

MGT101AB   1 Credit   1 Period
Techniques of Supervision II
Role and responsibilities of the supervisor for planning, training, and delegating. Problem solving and decision-making strategies are presented. Prerequisites: None.

MGT101AC   1 Credit   1 Period
Techniques of Supervision III
Explores the supervisor's role in evaluating employee performance and in handling conflict in the work environment. Strategies for coping with change and employee resistance to change are presented. Prerequisites: None.

MGT102   2 Credits   2 Periods
Introduction to Supply Chain Management
Overview of control and flow of materials from the supplier to the consumer. Elements and interrelationships of the supply chain including supply management, planning and control, and physical distribution. Prerequisites: None.

MGT105   1 Credit   1 Period
Leadership for Citizenship
Characteristics and types of leaders, responsibilities of leadership, and ethics of leadership as related to citizenship. Prerequisites: None.

MGT135   3 Credits   3 Periods
Global Procurement and Supply Management
The evolution of purchasing to supply management. Underlying fundamentals of tactical purchasing and strategic supply management. Prerequisites: MGT102 or permission of department.

MGT145   2 Credits   2 Periods
Integrated Resource Planning
Principles of supply chain requirements planning (MRP). System inputs, logic processing and system output used to effectively manage the resources of a business enterprise. Principles of requirements planning with emphasis on system interfaces and support of supply chain requirements planning. Includes practical application activities to reinforce principles and concepts. Prerequisites: MGT102 or permission of department.

MGT175   3 Credits   3 Periods
Business Organization and Management
Covers basic principles of managing quality and performance in organizations. Covers management functions: planning, organizing, leading, and controlling. Emphasizes continual improvement, ethics, and social responsibility. Prerequisites: None.

MGT179   3 Credits   3 Periods
Utilizing the Human Resources Department
Provides the opportunity to learn how to appropriately utilize the human resources department within an organization in order to improve job performance. Topics include staffing, training and development, manpower planning, compensation and benefits, federal labor laws and why people seek outside representation. Prerequisites: None.

MGT184   3 Credits   3 Periods
Operations Management
Elements of production control and inventory control policies, functions and techniques in supply chain environment. Roles and responsibilities of inventory/materials management and production control. Prerequisites: MGT102 or permission of department.

MGT215   2 Credits   2 Periods
Master Planning of Resources
Elements of master planning including demand management, business planning, production planning, resource planning, master production scheduling, and rough-cut capacity planning. Management's role in developing and integrating strategic plans and directives according to marketplace and customer requirements. Prerequisites: MGT102 or permission of department.

MGT227   3 Credits   3 Periods
Training and Instructional Design for Health Information Technology
Overview of learning management systems, instructional design software tools, teaching techniques and strategies, evaluation of learner competencies, maintenance of training records, and measurement of training program effectiveness. Prerequisites: Permission of Program Director or Instructor.

MGT228   3 Credits   3 Periods
Management, Planning, and Leadership for Health Information Technology
Principles of leadership and effective management of teams for Health Information Technology. Emphasis on the leadership modes and styles best suited to IT deployment. Survey of health care and public health organization and delivery in the United States, with an emphasis on professional roles, legal, ethical, and regulatory issues, and payment systems. Analysis of health reform initiatives in the U.S. Concept of "meaningful use" of electronic health records. Prerequisites or Corequisites: GBS110 or MGT251.

MGT229   3 Credits   3 Periods
Management and Leadership I
Covers management concepts and applications for business, industry, and government organizations. Prerequisites: None.

MGT240   3 Credits   3 Periods
Integrated Logistics Management
Logistical concepts and supply management linkages including order management, customer service, distribution, transportation, warehousing, and international logistics management. Prerequisites: MGT102 or permission of department.

MGT251   3 Credits   3 Periods
Human Relations in Business
Analysis of motivation, leadership, communications, and other human factors. Cultural differences that may create conflict and affect morale individually and within organizations. Prerequisites: None. MGT101 or MGT175 or MGT229 suggested, but not required.

MGT276   3 Credits   3 Periods
Personnel/Human Resources Management
Human resource planning, staffing, training, compensating, and appraising employees in labor management relationships. Prerequisites: None. MGT101, or MGT175, or MGT229 suggested but not required.

MGT281   3 Credits   3 Periods
Just-In-Time Lean Management
Principles and interrelationships of just-in-time, lean concepts, continuous improvement, total quality, and total employee involvement. Application of management principles to achieve organizational excellence. Prerequisites: MGT102 or permission of department.

MANUFACTURING TECHNOLOGY MET)

MET100AA   2 Credits   2 Periods
Tool Room I: Introduction to Machine Processes
Safe practices in the manufacturing environment. Organizational structure of a manufacturing organization. Equipment and processes used in material removal process. Required documentation. Tools and measurement devices used in manufacturing. Applied mathematics used in a manufacturing. Specific coolants, cooling oils and chemical used in the material removal process. Operator certification check sheet. Prerequisites: None.

MET100AB   2 Credits   2 Periods
Tool Room II: Machine, Processes, and Employment
Career selection process and completion of a resume and job application. Job interview under a simulated situation. Ideal work habits, ethics and career opportunities in the manufacturing field. Operator certification check sheet. Prerequisites: MET100AA.

MET102   5 Credits   9 Periods
Machine Processes, Theory and Application
Study and application of principles and theory of common metal removal processes including drilling, reaming, boring, milling, turning, and grinding. Cutting tool geometry and materials, cutting speeds and feeds, coolants, and precision measurement. Prerequisites or Corequisites: MET/GTC107 and MET109 or minimum score of 80% on related competency evaluation.

MET102AA   2 Credits   3 Periods
Machine Bench I: Machine Operations and Handtools
Safe use of handtools. Selection of correct tools for a specific machining operation. Applied mathematical calculations and operations essential in machining operations. Design of process flow charts, and material selection. Operator certification check sheet. Prerequisites: MET100AA and MET100AB.

MET102AB   1 Credit   2 Periods
Machine Bench II: Machine Operations and Manual Machines
Basic drill press operations and safety. Selection of correct tools for a specific machining operation. Applied mathematical calculations and operations essential in machining operations. Design of process flow charts, and material selection. Operator certification check sheet. Prerequisites: MET102AA.

MET102AC   1 Credit   2 Periods
Machine Bench III: Radial Drill
Radial drill operations and safety. Selection of correct tools for a specific machining operation. Applied mathematical calculations and operations essential in machining operations. Design of process flow charts, and material selection. Operator certification check sheet. Prerequisites: MET102AB.

MET103   3 Credits   3 Periods
Machine Shop Theory II
Materials used in the metal working industry and their various forms. Inspection and measurement, speed and feed calculations. Set-up and fabrication of metal components in saws, dull presses, lathes, and milling machines. Estimation of completion time for projects. Emphasis on theory of shop operations. Prerequisites: MET101 or permission of instructor.

MET103AA   2 Credits   3 Periods
Lathe I: Basic Manual Lathe Operations
Basic manual lathe operations and safety. Identification and selection of appropriate materials, tools, and chemicals for material removal process. Application of mathematical concepts in basic manual lathe operations. Process design and blueprint interpretation. Operator certification checklist. Prerequisites: MET100AA and MET100AB.

MET103AB   1 Credit   2 Periods
Lathe II: Secondary Manual Lathe Operations
Secondary manual lathe operations and safety. Identification and selection of appropriate materials, tools, and chemicals for material removal process. Application of mathematical concepts in secondary manual lathe operations. Process design and blueprint interpretation. Operator certification checklist. Prerequisites: MET103AA.

MET103AC   1 Credit   2 Periods
Lathe III: Secondary Manual Lathe Operations
Secondary manual lathe operations and safety. Identification and selection of appropriate materials, tools, and chemicals for material removal process. Application of mathematical concepts in secondary manual lathe operations. Process design and blueprint interpretation. Operator certification checklist. Prerequisites: MET103AB.

MET103AD   1 Credit   2 Periods
Lathe IV: Secondary Manual Lathe Operations
Secondary manual lathe operations and safety. Identification and selection of appropriate materials, tools, and chemicals for material removal process. Application of mathematical concepts in secondary manual lathe operations. Process design and blueprint interpretation. Operator certification checklist. Prerequisites: MET103AC.

MET104AA   2 Credits   3 Periods
Mill I: Basic Machine Operations
Basic vertical mill operations and safety. Selection of correct tools for a specific machining operation. Mathematical calculations and operations essential in machining operations. Design of process flow charts, and material selection. Blueprint interpretation. Operator certification check sheet. Prerequisites: MET100AA and MET100AB.

MET104AB   1 Credit   2 Periods
Mill II: Vertical Mill Attachments
Secondary vertical mill set-up operations and safety. Selection of correct tools for a specific machining operation. Mathematical calculations and operations essential in machining operations. Design of process flow charts, and material. Blueprint interpretation. Operator certification check sheet. Prerequisites: MET104AA.

MET104AC   1 Credit   2 Periods
Mill III: Open Set-ups
Vertical mill open set-up operations and safety. Selection of correct tools for a specific machining operation. Applied mathematical calculations and operations essential in machining operations. Blueprint interpretation. Operator certification check sheet. Prerequisites: MET104AB.

MET104AD   1 Credit   2 Periods
Mill IV: Boring
Boring operations on a vertical mill and safety. Selection of correct tools for a specific machining operation. Applied mathematical calculations and operations for boring operations using a vertical mill. Design of process flow charts and material selection. Blueprint interpretation. Completion of operator certification check sheet. Prerequisites: MET104AC.

MET105AA   2 Credits   3 Periods
Grind I: Basic Surface Machine Operations
Basic manual surface grinder operations and safety. Selection of correct tools and materials for a specific machining operation. Application of mathematical calculations and operations essential in machining operations. Design of process flow charts and blueprint interpretation. Operator certification checklist. Prerequisites: MET100AA and MET100AB.

MET105AB   1 Credit   2 Periods
Grind II: Secondary Surface Machine Operations
Secondary manual surface grinder operations and safety. Selection of correct tools and materials for a specific machining operation. Application of mathematical calculations and operations essential in machining operations. Design of process flow charts and blueprint interpretation. Operation certification checklist. Prerequisites: MET105AA.

MET105AC   1 Credit   2 Periods
Grind III: Secondary Surface Machine Operations
Advanced manual surface grinder operations and safety. Selection of correct tools and materials for a specific machining operation. Application of mathematical calculations and operations essential in machining operations. Design of process flow charts and blueprint interpretation. Operation certification checklist. Prerequisites: MET105AB.

MET105AD   1 Credit   2 Periods
Grind IV: Outside Diameter Machine Operations
Basic outside diameter manual grinder operations and safety. Selection of correct tools and materials for a specific machining operation. Application of mathematical calculations and operations essential in machining operations. Design of process flow charts and blueprint interpretation. Operation certification checklist. Prerequisites: MET105AC.

MET105AE   1 Credit   2 Periods
Grind V: Advanced Operations of a Manual Outside Diameter Grinder
Advanced manual, outside diameter grinder operations and safety. Selection of correct tools and materials for a specific machining operation. Application of mathematical calculations and operations essential in machining operations. Design of advanced process flow charts and blueprint interpretation. Operator certification checklist. Prerequisites: MET105AD.

MET106AA   1 Credit   2 Periods
Saw I: Basic Vertical and Horizontal Band Saws
Safety and basic operations of vertical and horizontal band saws. Applied mathematics in calculating material requirements. Selection of required materials, preventative and daily maintenance for a vertical and horizontal bandsaw. Selection and use of specific tools for given task.

Design of a process plan. Interpretation of select data from a blue print. Operator check sheet. Prerequisites: MET100AA and MET100AB.

MET106AB   1 Credit   2 Periods
Saw II: Vertical Band Saw
Safety and secondary operations of the vertical band saw. Applied mathematics in calculating material requirements. Selection of required materials, preventative and daily maintenance for a vertical bandsaw. Selection and use of specific tools for given task. Design of a process plan. Interpretation of select data from a blue print. Prerequisites: MET106AA.

MET106AC   1 Credit   2 Periods
Saw III: Advanced Vertical Band Saw
Safety and advanced operations of the vertical band saw. Contouring operations using the vertical bandsaw. Application of mathematical and material theories to the contouring operations of vertical band saws. Selection of required materials, preventative and daily maintenance for a vertical bandsaw. Selection and use of specific tools for given task. Design of a process plan. Interpretation of select data from a blue print. Prerequisites: MET106AB.

MET107   3 Credits   3 Periods
Technical Mathematics I
Mathematical principles to include basic operations, significant digits, exponents, square roots and order of operations. Solve problems using arithmetic, signed numbers, percentages, fractions, exponents, and square root. Use of hand held calculator. Technology related problems. Prerequisites: None.

MET108   3 Credits   3 Periods
Technical Mathematics II
A continuation of MET/GTC107. Fundamental algebraic operations. Problem solving invloving metric measurement, gears, pulleys, simple mechanism problems. Areas and volume calculations of geometric figures. Essentials of trigonometry for solving right and oblique triangles. Prerequisites: MET/GTC107 or permission of instructor.

MET109   3 Credits   4 Periods
Machine Trades Print Reading
Analysis and interpretation of technical drawings (prints) common to manufacturing. Types of print formats, line types, and view projections. Mathematical calculations for determining dimensions. Symbols and features present on prints. Introduction to Geometric Dimensioning and Tolerancing (GD&T) as it relates to prints. Prerequisites: None.

MET110   1 Credit   1 Period
Survey of Manufacturing Materials
Survey of metallurgy, composites, plastics, ceramics and other materials used in manufacturing. Material properties, classification and structure. Elementary strength of materials, heat treatment, and other materials processing requirements. Emphasis on relating materials and processes to specific hardware. Prerequisites: None.

MET111   3 Credits   3 Periods
Geometric Dimensioning and Tolerancing-Technologist Level
Symbols, terminology, modifiers, and units of measurement specific to geometric dimensioning and tolerancing (GDT). Rules and engineering tolerances as applied to engineering drawings and documents. Datum features and targets. Inspection process for verifying geometric tolerances. Prerequisites: MAT082 or equivalent or permission of department.

MET112   3 Credits   4 Periods
Inspection Techniques
Set-up and use of inspection tools, equipment, per industry standards including the use of surface plates, right angle blocks, cylindrical squares, V-Blocks and related equipment. Select, complete and interpret information from inspection forms. Inspection alternatives, tool control activities and application of geometric dimensioning and tolerance. Prerequisites: MET109 or permission of program director.

MET113   3 Credits   3 Periods
Applied Geometric Dimensioning and Tolerancing
Terminology, symbols, modifiers, and relationships specific to geometric dimensioning and tolerancing (GDT). Use of geometric controls to document design intent. Use of GDT calculations. Application of symbols, modifiers, and datum references specific to engineering drawings and related documents. Principles of GDT applied to manufacturing, quality, and verification processes. Prerequisites: MET109 or permission of program director.

MET114   1 Credit   1 Period
Quality Systems
Quality system models and their application to a manufacturing organization. Cost of quality in a manufacturing organization. Prerequisites: None.

MET115   2 Credits   2 Periods
Teamwork Dynamics in Manufacturing
Theory and practice of how team members and team leaders use listening, negotiating and interpersonal skills for the enhancement of team process. Concepts of team development and team problem-solving techniques. Prerequisites: None.

MET116   3 Credits   4 Periods
Total Quality Systems in Manufacturing
History of quality systems and procedures. Benefits of ISO (International Organization for Standardization) 9000 procedures. The twenty elements of ISO 9000. Components and requirements of the ISO 9000 quality and periodic audits. Prerequisites: None.

MET119   3 Credits   3 Periods
Workplace Quality Systems
History of quality systems and procedures. Benefits of ISO 9000 procedures. The twenty elements of ISO 9000. Components and requirements of the International Organization for Standardization (ISO) 9000 quality and periodic audits. Prerequisites: None.

MET124   3 Credits   4 Periods
Statistical Process Control for Technicians
Identify quality characteristics derived from variable and attribute data. Use of statistical rules for interpretation of control charts. Analyze and recommend appropriate actions on factors affecting process variation. Prerequisites: None.

MET126   2 Credits   2 Periods
Analyst Level Statistical Process Control
Use of statistical rules for interpretation of control charts. Analyze and recommend appropriate actions on factors affecting process variation. Prerequisites: MET124.

MET128   1 Credit   1 Period
ISO Procedures
History of quality systems and procedures. Benefits of ISO 9000 procedures. The 20 elements of ISO 9000. Components and requirements of the ISO 9000 quality and periodic audits. Audit etiquette. Prerequisites: None.

MET130   1 Credit   1 Period
Machinery Handbook
Algebra, applied geometric principles, and right angle trigonometric functions specific to machining. Use of the Machinery's Handbook for calculations. Tables, charts, and formulas are applied to ratios, proportions, tapers, levers, screws, pulleys, allowances, tolerances, and hole circles. Prerequisites: None.

MET131   3 Credits   3 Periods
Lean Manufacturing
Lean manufacturing methodologies and application to a manufacturing organization. Identification of waste and application of cost to poor quality process within a manufacturing organization. Lean manufacturing tools and implementation. Organizational buy-in. Prerequisites: None.

MET132   3 Credits   3 Periods
Six Sigma
Six Sigma methodologies, tools and implementation. Application of Six Sigma concepts to a manufacturing organization. Identification of variation and resulting organizational cost. Organizational buy-in. Prerequisites: None.

MET133   3 Credits   3 Periods
Continuous Improvement Project
Continuous Improvement Project Management. Managing a continuous improvement project in a manufacturing organization. Identifying Recourse requirements. Applying the continuous improvement tools in a manufacturing organization. Microsoft (MS) Project. Organizational buy-in. Project implementation. Prerequisites: None.

MET140   3 Credits   6 Periods
Computer-Aided Drafting for Manufacturing
Use of Computer Aided Drafting (CAD) equipment (hardware and software) in manufacturing and engineering drawings. Prerequisites: None.

MET203   5 Credits   9 Periods
Machine Tools
Set up and operation of machine tools including engine lathes, drill presses, grinders, and milling machines. Emphasis on safety procedures during machine operation. Completion of operator certification checklist. Prerequisites: MET102, MET/GTC107, and MET109.

MET206   3 Credits   6 Periods
CNC Programming
Manual programming using computer generation of program media. Set-up and operation of a three axis machine. Study of management implications and advantages of numerical control. Prerequisites: MET102 or (MET102AA, MET103AA, MET104AA and MET105AA), or machine shop experience or permission of program director.

MET206AA 2 Credits 2 Periods
CNC Programming: CNC Theory
Historical evolution of computerized numerical controlled (CNC) machines. Operations performed on a variety of CNC controlled machines including coordinate systems and their relationship with word address programming. Prerequisites: None.

MET206AB 1 Credit 2 Periods
Mathematics for CNC Programming
Application of basic mathematical principles to include addition and subtraction of decimals and fractions, conversions, degrees, minutes and seconds. Application and demonstration of trigonometry to achieve useful programming and dimensional data. Prerequisites: MET206AA, or machine shop experience, and/or departmental permission.

MET206AC 1 Credit 2 Periods
CNC Programming: Word Address Programming
Manual programming using computer generation of computerized numerical control (CNC) program editing software. Study of management implications and advantages of CNC. Prerequisites: MET206AB, or machine shop experience, and/or departmental permission.

MET207 3 Credits 3 Periods
CNC Mill: Operator Training I
Computer Numerical Control (CNC) Mill. Qualified setup and functioning program. Mill operations. Changing tool values. Replacing and qualifying tooling. CNC Mill operator training including machine controls, tooling and operations. Proper machine shop safety. Prerequisites: MET231 or permission of Program Director. Prerequisites or Corequisites: GTC/MET206 or permission of Program Director.

MET208 3 Credits 3 Periods
CNC Lathe: Operator Training I
Computer Numerical Control (CNC) Lathe qualified setup and functioning program. Operation of lathe. Changing tool values. Replacing and qualify tooling. CNC Lathe operator training including machine controls, tooling and operations. Proper machine shop safety. Prerequisites: MET231 or permission of Program Director. Prerequisites or Corequisites: GTC/MET206 or permission of Program Director.

MET209 3 Credits 6 Periods
CNC Mill: Operator Training II
Setup and operation of a computerized numerical control (CNC) mill and fourth axis rotary table. Computerized numerical control (CNC) machining center. Manufacturing operation instruction and functioning program. Changing tool values. Replacement and qualifying tooling. Advanced program editing to including CANNED cycle use and manipulation. CNC mill operator training including advanced machine control manipulation communication techniques, and fixturing concepts. Proper machine shop safety. Prerequisites: (MET102, MET203, MET206, and MET207) or permission of department.

MET210 3 Credits 6 Periods
CNC Lathe: Operator Training II
Setup and operation of a Computer Numerical Control (CNC) lathe and CNC Mill/Turn. Manufacturing operation instructions and functioning program. Changing tool values. Replacing and qualify tooling. Advanced CNC lathe topics including production tooling and coolants, live tooling (mill/turn), tail stock, bar pull/feed, advanced program editing, CANNED cycle use and manipulation, and set up time reduction. Proper machine shop safety. Prerequisites: (MET102, MET203, MET206 and MET208) or permission of department.

MET211 3 Credits 3 Periods
Tooling Applications
Exploration of current tooling technologies used in manufacturing with an emphasis on computerized numerical control (CNC) applications. Metal removal strategies, troubleshooting tooling problems, and set up and down time reduction tooling and applications. Coolant selection and maintenance. Safety procedures. Prerequisites: None.

MET212AA 3 Credits 6 Periods
CAD CAM Programming for CNC Machines: GibbsCam
Programming of Numerical Control (NC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM), utilizing Computer Aided Drafting and Computer Aided Manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Generate programs using CAM post processor. Prerequisites: MET206.

MET212AB 3 Credits 6 Periods
CAD CAM Programming for CNC Machines: SurfCam
Programming of Numerical Control (NC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM), utilizing Computer Aided Drafting and Computer Aided Manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Generate programs using CAM post processor. Prerequisites: MET206.

MET212AD 3 Credits 6 Periods
CAD/CAM Programming for Computer Numerical Control (CNC) Machines: MasterCam
Programming of numerical control (CNC) mill, lathe, and wire electrical discharge machine (EDM) utilizing computer aided drafting and computer aided manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Program generation using CAM post processor. Prerequisites: GTC/MET206.

MET212AE 3 Credits 6 Periods
CAD/CAM Programming for Computer Numerical Control (CNC) Machines: FeatureCam
Programming of Computer Numerical Control (CNC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM), utilizing Computer Aided Drafting and Computer Aided Manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Program generation using CAM post processor. Prerequisites: GTC/MET206.

MET213AA 3 Credits 6 Periods
Advanced CAD/CAM CNC Programming: GibbsCam
Programming of Computer Numerical Control (CNC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM) utilizing multiaxis and three-dimensional graphics input. Prerequisites: MET212AA.

MET213AB   **3 Credits**   **6 Periods**
Advanced CAD/CAM CNC Programming: SurfCam
Programming of Computer Numerical Control (CNC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM) utilizing multiaxis and three dimensional graphics input. Prerequisites: MET212AB.

MET213AD   **3 Credits**   **6 Periods**
Advanced CAD/CAM CNC Programming: MasterCam
Programming of computer numerical control (CNC) mill, lathe, and wire electrical discharge machine (EDM) utilizing multi- axis and three-dimensional computer aided drafting and computer aided manufacturing (CAD/CAM) graphics input. Prerequisites: MET212AD.

MET215   **3 Credits**   **5 Periods**
Advanced CNC Operation
Setup and operation of a Computer Numerical Control (CNC) machining center. Manufacturing operation instructions and functioning programming. Changing tool values. Replacing and qualify tooling. Advanced CNC topics including production tooling and coolants, live tooling (mill/turn), tail stock, bar pull/feed, advanced program editing, canned cycle use and manipulation, set up time reduction, advanced machine control manipulation communication techniques, and fixturing concepts. Proper machine shop safety. Prerequisites: MET207, or MET208, or permission of Instructor.

MET216   **3 Credits**   **6 Periods**
Solids Design I
CAD/CAM modeling, CNC part production, CAD to CAM system integration and Solid Model part representation. Applies CAD/CAM in the role of (CIM) Computer Integrated Technology. Prerequisites: MET140 or permission of department.

MET216AA   **3 Credits**   **3 Periods**
Solid Design I: Pro/Engineer
Basic concepts of Pro/Engineer. Hardware and software components of the Pro/Engineer system. Start-up procedures and model managing. Use of Pro/Engineer commands. Creation of drawings and assemblies in two dimensional (2D), three dimensional (3D), multi- and auxiliary views, and solids. Prerequisites: MET140 or permission of department.

MET216AB   **3 Credits**   **3 Periods**
Solid Design I: Solid Edge
Hardware and software components of the Solid Edge system. Start-up, mode selection and model managing procedures. Basic entity creation and construction of a solid model. Use of annotation, constraints, and part dimensioning. Solid model shading, rendering and part cosmetics. Construction of multi-view and auxiliary view objects. Prerequisites: None.

MET216AC   **3 Credits**   **3 Periods**
Solid Design I: CATIA
Basic concepts of interactive Computer Automated Three- Dimensional Integrated Design (CATIA). Hardware and software components of the CATIA system. Start-up procedures and model managing. Use of CATIA commands. Creation of drawings and assemblies in two dimensional (2D), three dimensional (3D), multi- and auxiliary views, and solids. Prerequisites: MET140 or permission of department.

MET216AE   **3 Credits**   **3 Periods**
Solid Design I: SolidWorks
Basic concepts of SolidWorks to include hardware and software components of the SolidWorks system. Start-up procedures and model managing. Use of SolidWorks commands. Creation of drawings and assemblies in two-dimensional (2D), three- dimensional (3D), multi- and auxiliary views, and solids. Prerequisites: MET140 or permission of department.

MET217AA   **3 Credits**   **3 Periods**
Solid Design II: Pro/Engineer
Hardware and software components of the Pro/Engineer system and their function. Advanced features utilized in the design of solids. Skill enhancement in the creation of advanced assemblies and part design. Use of specific tools in the design of complex surfaces. Hands on applications with Pro/Engineer system. Prerequisites: MET216AA or permission of department.

MET217AB   **3 Credits**   **3 Periods**
Solid Design II: Solid Edge
Specific Solid Edge environment concepts including history trees, sketch pads and sketch planes. Sketch in place relations, construction relations, reference geometry, and constraint networks. Use of specific tools for advanced surfacing, using loft, sweep, variable sweep and mesh of curves. Use of surface editing techniques. Demonstration of select techniques in advanced part and advanced assembly design. Use of specific mechanism design techniques. Prerequisites: MET216AB or permission of department.

MET217AC   **3 Credits**   **3 Periods**
Solid Design II: CATIA
Advanced modeling techniques. Solid part creation planning. Use of the Part Editor to modify solids. Management of an assembly using a session. Creation of parts using the multi-model process. Prerequisites: MET216AC or permission of department.

MET220   **3 Credits**   **4 Periods**
Fundamentals of Coordinate Measuring Machines (CMM)
Fundamentals and general aspects of coordinate measuring machines (CMM). Basic measuring techniques and operation, including conformance to geometric dimensioning and tolerancing requirements using both manual and programmable (automatic) coordinate measuring machines. Prerequisites: MET112 and MET113.

MET224   **3 Credits**   **4 Periods**
Applied Statistical Process Control Methods
Identification of quality characteristics derived from variable and attribute data. Usage of statistical rules for interpretation of control charts. Analysis and recommendation of appropriate actions on factors affecting process variation. Prerequisites: MET119.

MET225   **4 Credits**   **6 Periods**
Rapid Manufacturing Model Making
Rapid Manufacturing (RM) fundamentals, terminology, main categories and RM machine technology types. Advantages and disadvantages of varied RM technologies, materials and finishing for RM model making. Applied laboratory activities in RM model making and post-production finishing. Prerequisites: MET140 or (MET216AA, MET216AB, MET216AC, and MET216AE) or permission of department.

MET231   3 Credits   5 Periods
Manufacturing Processes and Materials
Basic machining operations related to drilling, milling, grinding, and lathe processes. Development of fundamental skills, practices and safety in working with machine tools, measurement instruments, and related equipment common to manufacturing. Theoretical and practical experiences related to the machining of plastics, ferrous and nonferrous metals. Laboratory projects and inspection sheets for each project. Prerequisites: MET112 and MET113 or permission of Instructor.

MET236   3 Credits   6 Periods
CAD/CAM Computer Numerical Control (CNC) Programming
Programming of Numerical Control (NC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM), utilizing Computer Aided Drafting and Computer Aided Manufacturing (CAD/CAM) for design and generation of part geometry. Verification of tool path using CAD graphics. Generate programs using CAM post processor. Prerequisites: GTC/MET206.

MET236AD   3 Credits   5 Periods
CAD/CAM Computer Numerical Control (CNC) Programming: MasterCam
Computer Programming of two-dimensional (2-1/2 Axis) Computer Numerical Control (CNC) Machines. Tool path generation for CNC mill, lathe, wire EDM, router, laser, waterjet and hybrid CNC machine tools. Tool path geometry creation, importation and modification. Cutting parameters selection, including tool geometry, speeds, feeds and tool path optimization. Tool path simulation for material removal verification with solid and wireframe graphics. Word Address (G-code) CNC tool code production and output verification on FANUC and HAAS based machine tools. Prerequisites: GTC/MET206 or permission of program director.

MET236AF   3 Credits   5 Periods
CAD/CAM Computer Numerical Control (CNC) Programming: Unigraphics NX
Unigraphics manufacturing terminology, invoking manufacturing and set default module, user preferences, roles and user menus. Unigraphics NX documentation, setup program, operations, tooling and geometry groups. Geometry import, work reference and machine coordinate system. Programming of two-dimensional (2 and 2-1/2 Axis) Computer Numerical Control (CNC) machines and tool path generation for common machine tools. Tool path simulation for material removal. In process work piece creation and use. Tool path post processing with G and M code verification and editing. Prerequisites: GTC/MET206, (MET207 or MET208 or MET215), and MET286AD, or permission of Program Director.

MET238   3 Credits   3 Periods
Greenbelt Training
Principles of competitiveness, company growth, achieving breakthroughs and six sigma philosophies. Problem solving processes and tools. Members and roles for project teams. Thought process map, scope statement and quality concepts. Root cause and corrective action (RCCA), failure modes and corrective action (FMEA and project management. Identification of potential root causes and execution of a root cause plan. Identification and implementation of process solutions for specific projects. Measurement and holding of gains. Prerequisites: None.

MET246   3 Credits   6 Periods
Advanced CAD/CAM CNC Programming
Programming of Computer Numerical Control (CNC) Mill, Lathe, and Wire Electrical Discharge Machine (EDM) utilizing multiaxis and three dimensional graphics input. Prerequisites: MET236.

MET246AD   3 Credits   5 Periods
Advanced CAD/CAM CNC Programming: MasterCam
Computer programming of three-dimensional (3D) (3 and 4-axis simultaneous) Computer Numerical Control (CNC) Machines. Tool path generation for CNC mill, lathe, Wire-EDM, router, laser, waterjet and hybrid CNC machine tools. Tool path geometry creation, importation and modification. Cutting parameters selection and control, including tool geometry, speeds, feeds and tool path optimization. Tool path simulation for material removal verification with solid and wireframe graphics. Produce Word Address (G-code) CNC tool code production and output verification on FANUC and HAAS based machine tools. Prerequisites: MET236AD.

MET246AF   3 Credits   5 Periods
Advanced CAD/CAM Computer Numerical Control (CNC) Programming: Unigraphics NX
Computer programming of multi-axis (3, 4 and 5-axis positional and simultaneous) Computer Numerical Control (CNC) Machines. Tool path generation for common tool room machinery. Tool path geometry creation, importation and modification. Cutting parameters selection and control, including tool geometry, speeds, feeds and tool path optimization. Tool path simulation for material removal verification with solid geometry. Setup and application of templates for machines, processes and tools. Usage of automated shop documentation. Word Address (G-code) CNC machine tool code production and output verification on CNC machine tools. Creation and editing of postprocessors for various machine types. Prerequisites: MET236AF or permission of Program Director.

MET254   3 Credits   3 Periods
Lean and Six Sigma Applied Concepts
Lean manufacturing and Six Sigma methodologies and application to an organization. Identification of waste and application of cost to poor quality process within an organization. Quality System tools and implementation. Organizational buy-in. Prerequisites: MET119 or permission of Program Director.

MET260   3 Credits   3 Periods
Tooling and Fixturing
Various types of jigs and fixtures and their function as related to Numerically Controlled (NC) machines. Clamping and workholding principles and also use of common jigs and fixture hardware. Prerequisites: (MET111 and MET140) or permission of department.

MET264   3 Credits   3 Periods
Manufacturing Process Planning
Development of a production plan (routing) from basic pre- production information in the product drawing, expected volume, available equipment, set-up reduction requirements, and other planning requirements. Prerequisites or Corequisites: MET260.

MET266AD   3 Credits   5 Periods
Solids CAD/CAM Programming: Mastercam
Solid Modeling of parts, molds and fixtures using integrated solids; hybrid modeling of solids, surfaces and wireframe for Computer Numerical Control (CNC) part production. Computer Aided Drafting to Computer Aided Manufacturing (CAD/CAM) system integration with Solid Model feature recognition and history tree management. Boolean addition, subtraction and common for volume calculation between solids and surfaces. Prerequisites: MET246AD, or permission of instructor.

MET268   3 Credits   3 Periods
Manufacturing Productivity Concepts
Operation and programming of a flexible manufacturing cell. Operation and programming of robotics and computers as they relate to the cell. Also, programming logic and cell master control computers. Prerequisites: None.

MET270   3 Credits   3 Periods
Introduction to Cost Estimating for Machining and Manufacturing
Standard practices in machining and manufacturing cost estimating. Applications of speeds, feeds and formulas to equipment and processes. Forming, fabricating and welding. Mathematics of cost estimating and variables affecting cost. Prerequisites None.

MET276AD   1 Credit   2 Periods
MasterCam Certified Programmer Mill Level I: Test Preparation: CPgM1
Review of the latest Certified Programmer Mill Level I (CPgM1) exam in preparation for exam. Competency of geometry construction, tool plane and work plane construction, Computer Numerical Control (CNC), milling tool path generation, and tool path verification with core Mastercam software. Prerequisites: Permission of instructor.

MET284   3 Credits   4 Periods
Advanced Quality Process Methods
High-level quality improvement process applied to manufacturing. Specific emphasis on experimental methods focused on waste reduction and general quality and process improvement. Understanding key process variables and decision-making methods based on established procedures. Applying statistical methods to process improvement. Prerequisites: MET119, MET224, and MET254.

MET286AD   3 Credits   5 Periods
Solid Design I: Solid Design I: Unigraphics NX
Hardware and software components of the Unigraphics NX system. Start-up, mode selection and model managing procedures. Basic entity creation and construction of a solid model. Use of annotation, constraints, and part dimensioning. Solid model shading, rendering and part cosmetics. Construction of multi- view and auxiliary view objects. Prerequisites: MET109 or permission of Program Director.

MET286AE   3 Credits   5 Periods
Solid Design I: Part Modeling: Solid Works
Basic concepts of solid model mechanical design. Feature-based parametric modeling for mechanical design and technical documentation. Creation of technical documents of mechanical parts and assemblies per the American Society of Mechanical Engineers (ASME) Y14 standards. Prerequisites: MET109, or permission of instructor.

MET288AD   3 Credits   5 Periods
Solid Design II: Advanced Part Modeling: Unigraphics
Hardware and software components of the Unigraphics-NX system and their function. Advanced features utilized in the design of solids. Skill enhancement in the creation of advanced assemblies, part design and basic surface creation. Use of specific tools in the design of complex geometry. Hands on applications with NX Software. Prerequisites: MET286AD or permission of instructor.

MET288AE   3 Credits   5 Periods
Solid Design II: Advanced Part Modeling: SolidWorks
Hardware and software components of the SolidWorks system and their function. Advanced features utilized in the design of solids. Skill enhancement in the creation of advanced assemblies and part design. Use of specific tools in the design of complex surfaces. Hands on applications with SolidWorks system. Prerequisites: MET286AE, or permission of instructor.

MET289AE   3 Credits   5 Periods
Solid Design III: Detailing/GD&T SolidWorks
Fundamentals of drafting. Creation of engineering drawings. Parts and assemblies using associative mechanical design software. Principles and applications presented in accordance with the American Society of Mechanical Engineers (ASME) Y14. series of standards. Drawing sheets and settings, views and projections, dimensions and annotations, geometric dimensioning and tolerancing (GD&T), assembly drawings, templates, bill of material, configurations and tables. Prerequisites: MET288AE, or permission of instructor.

MET290AE   3 Credits   5 Periods
Solid Design IV: Assembly and Kinematics SolidWorks
Assembly modeling of mechanical design. Use of top-down and bottom-up technique to product development. Introduction to Kinematics; linear and rotary motors, linear springs and gravity. Introduction to Finite Element Analysis (FEA) using Cosmos® Tools for the discussion of stress analysis, gap/contact analysis, and best practices. Analysis of features and assembly's using COSMOSWorks™ in the SolidWorks environment. Prerequisites: MET289AE, or permission of instructor.

MET291AE   1 Credit   2 Periods
Solid Design: Certified SolidWorks Associate Test Preparation: CSWA
Preparation for latest Certified SolidWorks Associate (CSWA) exam. Exam objectives, and Solid Design, Assemblies, COSMOSXpress and Technical Documentation in current version; Core SolidWorks. Prerequisites: Permission of instructor.

MET292AE   3 Credits   5 Periods
Solid Design III: Detailing/GD&T/Assemblies/Kinematics: SolidWorks
Assembly modeling of mechanical design. Use of top-down and bottom-up technique to product development. Creation of engineering drawings for parts and assemblies using associative mechanical design software. Principles and applications presented in accordance with the American Society of Mechanical Engineers (ASME) Y14 series of standards. Drawing sheets and settings, views and projections, dimensions and annotations, geometric dimensioning and tolerancing (GD&T), assembly drawings, templates, bill of material, configurations and tables. Introduction to Kinematics; linear and rotary motors, linear

springs and gravity. Introduction to Finite Element Analysis (FEA) using SimulationXpress for the discussion of stress analysis, gap/contact analysis, and best practices. Prerequisites: MET113 and MET288AE, or permission of Instructor.

MET293AE   3 Credits   4 Periods
Solid Design: Surface Modeling: SolidWorks
Use of various techniques for creation of complex surfaces with tangent and curvature continuities. Creation of solid features using surfaces as reference for complex geometry and freeform shapes. Manipulation of surfaces using editing tools. Analysis of surfaces for quality and desired characteristics. Prerequisites: MET292AE, or MET289AE, or permission of Instructor.

MET294AE   3 Credits   4 Periods
Solid Design: Sheet Metal: SolidWorks
Use of various tools and techniques to model sheet metal parts. Design of sheet metal parts and assemblies. Creation of sheet metal production drawings. Transformation of a part built conventionally into a sheet metal to be flattened with sheet metal specific features applied. Prerequisites: MET292AE, or MET289AE, or permission of Instructor.

MET297AA   3 Credits   18 Periods
Solid Design Internship: Three-dimensional (3D) Printing
Industrial Design Technology work experience in a business or industry in the area of three-dimensional (3D) printing. Prerequisites: Permission of department. MET297AA students must complete 75 hours of designated work per credit for a total of 225 hours.

MET297AB   3 Credits   18 Periods
Solid Design Internship: 4 and 5 Axis Computer Numerical Control (CNC)
Industrial Design Technology work experience in a business or industry in the area of 4 and 5 Axis Computer Numerical Control (CNC). Prerequisites: Permission of department. MET297AB students must complete 75 hours of designated work per credit for a total of 225 hours.

MET297AC   3 Credits   18 Periods
Solid Design Internship: Reverse Engineering
Industrial Design Technology work experience in a business or industry in the area of reverse engineering. Prerequisites: Permission of department. MET297AC students must complete 75 hours of designated work per credit for a total of 225 hours.

MET297AD   3 Credits   18 Periods
Solid Design Internship: Welding Fabrication
Industrial Design Technology work experience in a business or industry in the area of welding fabrication. Prerequisites: Permission of department. MET297AD students must complete 75 hours of designated work per credit for a total of 225 hours.

MET297AE   3 Credits   18 Periods
Solid Design Internship: Advanced Solid Design
Industrial Design Technology work experience in a business or industry in the area of advanced solid design. Prerequisites: Permission of department. MET297AE students must complete 75 hours of designated work per credit for a total of 225 hours.

MATHEMATICS (MAT)

MAT065   1 Credit   1 Period
Graphing Calculator
Computations, graphing, matrices, and elementary programming using a graphing calculator. Prerequisites: None.

MAT081   4 Credits   4 Periods
Basic Arithmetic
Primary emphasis placed on fundamental operations with whole numbers, fractions, decimals, integers, and rational numbers; proportions, and percentages. Other topics include representations of data, geometric figures, and measurement. Prerequisites: Satisfactory score on district placement exam. Students may receive credit for only one of the following: MAT081, MAT082, or MAT083.

MAT082   3 Credits   3 Periods
Basic Arithmetic
Primary emphasis placed on fundamental operations with whole numbers, fractions, decimals, integers, and rational numbers; proportions, and percentages. Other topics include representations of data, geometric figures, and measurement. Prerequisites: Satisfactory score on district placement exam. Students may receive credit for only one of the following: MAT081, MAT082, or MAT083.

MAT083   5 Credits   5 Periods
Basic Arithmetic Expanded
Additional review of basic arithmetic skills. Fundamental operations with whole numbers, common fractions, decimals, and percentages. Additional topics include math anxiety reduction techniques, study skills, and test-taking strategies. Prerequisites: None. Students may receive credit for only one of the following: MAT081, MAT082, or MAT083.

MAT090   5 Credits   5 Periods
Developmental Algebra
Linear behavior; linear equations and inequalities in one and two variables; graphs; systems of equations in two variables; function notation, graphs, and data tables; operations on polynomials; properties of exponents; applications. Prerequisites: Grade of "C" or better in MAT082, or MAT102, or equivalent, or satisfactory score on District Placement exam. Students may receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT091   4 Credits   4 Periods
Introductory Algebra
Linear behavior; linear equations and inequalities in one and two variables; graphs; systems of equations in two variables; function notation, graphs, and data tables; operations on polynomials; properties of exponents; applications. Prerequisites: Grade of "C" or better in MAT082, or MAT102, or equivalent or satisfactory score on District placement exam. May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT092   3 Credits   3 Periods
Introductory Algebra
Linear behavior; linear equations and inequalities in one and two variables; graphs; systems of equations in two variables; function notation, graphs, and data tables; operations on polynomials; properties of exponents; applications. Prerequisites: Grade of "C" or better in

MAT082, or MAT102, or equivalent, or satisfactory score on District Placement exam. May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT093   5 Credits   5 Periods
Introductory Algebra/Math Anxiety Reduction
Linear behavior; linear equations and inequalities in one and two variables; graphs; systems of equations in two variables; function notation, graphs, and data tables; operations on polynomials; properties of exponents; applications. This course will be supplemented by instruction in anxiety reducing techniques, math study skills, and test taking techniques. Prerequisites: Grade of "C" or better in MAT082, or MAT102, or equivalent or satisfactory score on District placement exam. May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT102   3 Credits   3 Periods
Mathematical Concepts/Applications
A problem solving approach to mathematics as it applies to life and the world of work. Development, demonstration, and communication of mathematical concepts and formulas that relate to measurement, percentage, statistics, and geometry. Prerequisites: Grade of "C" or better in MAT082, or equivalent, or satisfactory score on District placement exam.

MAT103AA   2 Credits   2 Periods
Mathematics for Industrial Applications I
Fundamental operations with whole numbers, common fractions, decimals, percentages, and ratio and proportion. Graphs, measurements, and measurement tools. Fundamentals of algebra to include signed numbers, algebraic operations, linear equations, graphs of linear equations, and systems of equations. Includes applied math problems. Prerequisites: Grade of "C" or better in MAT082, or equivalent, or satisfactory score on District placement exam.

MAT103AB   2 Credits   2 Periods
Mathematics for Industrial Applications II
Fundamentals of plane geometry and angular measure. Theorems, axioms, corollaries and definitions applying to triangles, congruent and similar figures, polygons, and circles. Computed measure of geometric figures, area, volume, surface area, and weight. Fundamentals of trigonometry, trigonometric functions, right triangles, law of sines and law of Cosines. Includes applied math problems. Prerequisites: MAT103AA or permission of the instructor.

MAT103BA   3 Credits   3 Periods
Mathematics for Industrial Applications I
Fundamental operations with whole numbers, common fractions, decimals, percentages, and ratio and proportion. Graphs, measurements, and measurement tools. Fundamentals of algebra to include signed numbers, algebraic operations, linear equations, graphs of linear equations, quadratic equations, and systems of equations. Includes applied math problems. Prerequisites: None.

MAT103BB   3 Credits   3 Periods
Mathematics for Industrial Applications II
Fundamentals of plane geometry and angular measure. Theorems, axioms, corollaries and definitions applying to triangles, congruent and similar figures, polygons, and circles. Computed measure of geometric

figures, area, volume, surface area, and weight. Fundamentals of trigonometry, trigonometric functions, right triangles, Law of Sines and Law of Cosines. Includes applied math problems. Prerequisites: MAT103BA or permission of the instructor.

MAT108   2 Credits   2 Periods
Tutored Mathematics
Structured tutorial assistance and math study skills to help students achieve success in a mathematics course in which they are concurrently enrolled. Mathematics study skills emphasized. Prerequisites: None. Corequisites: MAT082, or MAT090, or MAT091, or MAT092, or MAT120, or MAT121, or MAT122, or MAT140, or MAT 141, or MAT 142, or MAT150, or MAT151, or MAT152, or permission of department chair. MAT108 may be repeated for a total of ten (10) credits.

MAT120   5 Credits   5 Periods
Intermediate Algebra
Quadratic, rational, radical, exponential, and logarithmic functions and equations; graphs of quadratic, exponential, and logarithmic functions; equations quadratic in form; operations on rational expressions, radical expressions, and complex numbers; rational exponents; applications. Prerequisites: Grade of "C" or better in MAT090, MAT091, MAT092, MAT093, or equivalent, or a satisfactory score on the District placement exam. May receive credit for only one of the following: MAT120, MAT121, or MAT122.

MAT121   4 Credits   4 Periods
Intermediate Algebra
Quadratic, rational, radical, exponential, and logarithmic functions and equations; graphs of quadratic, exponential, and logarithmic functions; equations quadratic in form; operations on rational expressions, radical expressions, and complex numbers; rational exponents; applications. Prerequisites: Grade of "C" or better in MAT090, MAT091, MAT092, MAT093, or equivalent, or a satisfactory score on the District placement exam. May receive credit for only one of the following: MAT120, MAT121, or MAT122.

MAT122   3 Credits   3 Periods
Intermediate Algebra
Quadratic, rational, radical, exponential, and logarithmic functions and equations; graphs of quadratic, exponential, and logarithmic functions; equations quadratic in form; operations on rational expressions, radical expressions, and complex numbers; rational exponents; applications. Prerequisites: Grade of "B" or better in MAT090, MAT091, MAT092, MAT093, or equivalent, or a satisfactory score on the District placement exam. May receive credit for only one of the following: MAT120, MAT121, or MAT122.

MAT142   3 Credits   3 Periods
College Mathematics
Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include set theory, probability, statistics, finance, and geometry. Prerequisites: Grade of "C" or better in MAT120, or MAT121, or MAT122 or equivalent, or satisfactory score on District placement exam. Appropriate for the student whose major does not require college algebra or precalculus.

MAT150   5 Credits   5 Periods
College Algebra/Functions
Analysis and interpretation of the behavior and nature of functions including polynomial, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, modeling and solving real world problems. Additional topics may include matrices, combinatorics, sequences and series, and conics. Prerequisites: Grades of "C" or better in MAT120, or MAT121, or MAT122 or equivalent, or satisfactory score on District placement exam. May receive credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

MAT151   4 Credits   4 Periods
College Algebra/Functions
Analysis and interpretation of the behavior and nature of functions including polynomial, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, modeling and solving real world problems. Additional topics may include matrices, combinatorics, sequences and series, and conics. Prerequisites: Grade of "C" or better in MAT120, or MAT121, or MAT122, or equivalent, or satisfactory score on District placement exam. May receive credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

MAT152   3 Credits   3 Periods
College Algebra / Functions
Analysis and interpretation of the behavior and nature of functions including polynomial, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, modeling and solving real world problems. Additional topics may include matrices, combinatorics, sequences and series, and conics. Prerequisites: Grade of "B" or better in MAT120, or MAT121, or MAT122, or equivalent, or satisfactory score on District placement exam. Students may receive credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

MAT156   3 Credits   3 Periods
Mathematics for Elementary Teachers I
Focuses on numbers and operations. Algebraic reasoning and problem solving integrated throughout the course. Prerequisites: Grade of "C" or better in MAT142 or MAT150 or MAT151 or MAT152 or equivalent, or satisfactory score on District placement exam.

MAT172   3 Credits   3 Periods
Finite Mathematics
An introduction to the mathematics required for the study of social and behavioral sciences. Includes combinatorics, probability, descriptive statistics, matrix algebra, linear programming and the mathematics of finance. Includes applications of technology in problem-solving. Prerequisites: Grade of "C" or better in MAT150, or MAT151, or MAT152, or MAT187 or equivalent, or satisfactory score on District placement exam.

MAT182   3 Credits   3 Periods
Plane Trigonometry
A study of measures of angles, properties of graphs of trigonometric functions, fundamental identities, addition and half-angle formulas, inverse trigonometric functions, solutions of trigonometric equations, complex numbers and properties of triangle solution. Prerequisites: Grade of "C" or better in MAT150, or MAT151, or MAT152, or equivalent, or concurrent registration in MAT150, or MAT151, MAT152, or satisfactory score on District placement exam.

MAT187   5 Credits   5 Periods
Precalculus
A precalculus course combining topics from college algebra and trigonometry. Preparation for analytic geometry and calculus. Prerequisites: Grade of "B" or better in MAT120, or MAT121, or MAT122, or equivalent, or satisfactory score on district placement exam. Strongly recommended that students have some knowledge of trigonometry. Students may receive credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

MAT206   3 Credits   3 Periods
Elements of Statistics
Basic concepts and applications of statistics, including data description, estimation and hypothesis tests. Prerequisites: (A grade of "C" or better in MAT140 or MAT141 or MAT142) or (A grade of "C" or better in MAT150 or MAT151 or MAT152) or equivalent, or satisfactory score on District placement exam.

MAT212   3 Credits   3 Periods
Brief Calculus
Introduction to the theory, techniques and applications of the differential and integral calculus of functions with problems related to business, life, and the social sciences. Prerequisites: Grade of "C" or better in MAT150, or MAT151, or MAT152, or MAT187, or appropriate Math placement test score. Students may receive credit for only one of the following: MAT212 or MAT213.

MAT213   4 Credits   4 Periods
Brief Calculus
Introduction to the theory, techniques, and applications of the differential and integral calculus of functions with problems related to business, life, and the social sciences. Prerequisites: Grade of "C" or better in MAT150, or MAT151, or MAT152, or MAT187, or appropriate Math placement test score. Students may receive credit for only one of the following: MAT212 or MAT213.

MAT217   3 Credits   3 Periods
Mathematical Analysis for Business
An introduction to the mathematics required for the study of business. Includes multivariable optimization, Lagrange multipliers, linear programming, linear algebra, probability, random variables, discrete and continuous distributions. Prerequisites: Grade of "C" or better in MAT212 or MAT213.

MAT220   5 Credits   5 Periods
Calculus with Analytic Geometry I
Limits, continuity, differential and integral calculus of functions of one variable. Prerequisites: Grade of "C" or better in [MAT182 and (MAT150, MAT151 or MAT152)], or MAT187, or appropriate Math placement test score. Students may receive credit for only one of the following: MAT220 or MAT221.

MAT221   4 Credits   4 Periods
Calculus with Analytic Geometry I
Limits, continuity, differential and integral calculus of functions of one variable. Prerequisites: Grade of "C" or better in [MAT182 and (MAT150, MAT151 or MAT152)], or MAT187, or appropriate Math

placement test score. Students may receive credit for only one of the following: MAT220 or MAT221.

MARKETING (MKT)

MKT268   3 Credits   3 Periods
Merchandising
Surveys structure and operation of retail organizations. Emphasizes merchandising to include price, location, time promotion and quantity. Prerequisites: None. MKT271 suggested but not required.

MKT271   3 Credits   3 Periods
Principles of Marketing
An analysis of the marketing process and environment with regard to the product, pricing, distribution, and communication in order to satisfy buyer needs. Prerequisites: None.

MECHANICAL APPRENTICESHIPS (MEC)

MEC101   5 Credits   5 Periods
HVAC I: Principles and Trade Calculations
Basic principles of heating, ventilating and air conditioning (HVAC). Trade calculations, algebraic and geometric equations, and scientific notation. Use and maintenance of HVAC trade tools. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC102   5 Credits   5 Periods
Construction Pipe Trades I
Causes, prevention and response for on-the-job accidents. Personnel protection for specific types of work place hazards. Prevention and response for electrical hazards and fire. Rigging equipment inspection and use. Lifting and moving equipment. Types of cranes and crane hand signals. Safety precautions for rigging and moving materials. Blueprint features and care. Safe and proper use of hand and power construction tools. Trade calculations using English and metric units. Effective verbal and written skill building, employability skills and concept of materials handling. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC103   5 Credits   5 Periods
HVAC II: Piping, Soldering, Brazing and Electrical
Application, preparation and joining of copper and plastic pipe. Soldering and brazing tools, materials, and procedures. Refrigeration cycle, furnace operation and maintenance. Use of multimeter and manometer. Electricity, electrical circuits, and electrical components. Measurement of voltage, current, resistance and circuit continuity. Ohm's Law. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC104   5 Credits   5 Periods
Construction Pipe Trades II
Overview of work performed by pipefitter. Hand and power tools. Motorized and engine driven equipment. Ladders and scaffolds. Pipe cutting and installation techniques. Pipe joint preparation. Oxyfuel cutting. Related Occupational Safety and Health Administration (OSHA) regulations. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC106   5 Credits   5 Periods
HVAC III: Systems
Air distribution systems, measurement instruments and venting and sizing. Gas-fired equipment, furnaces, heating, ventilating, and air conditioning (HVAC) systems, and electric heating systems. Alternating current (AC) motors, circuit components and testing instruments. Maintenance, safety, troubleshooting, and service techniques. Job documentation and customer relations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC108   5 Credits   5 Periods
Residential and Industrial Plumbing III
Water piping materials. Sources and treatment of public, private, and individual water systems. Water distribution and supply systems. Cross-connection protection and pipe identification. Hot water heaters. Sanitary drainage systems. Plumbing calculations and blueprint reading. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC109   0.5 Credit   0.5 Period
Excavations
Excavation for underground piping systems including properties of specific soils, identification of specific soil types, hazards, abatement of hazards, Occupational Safety and Health Administration (OSHA) regulations, shoring, support systems and bedding material. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC110   5 Credits   5 Periods
Introduction to Sheet Metal
Introductory concepts of the sheet metal trade to include trade history, apprenticeships and craftsmanships. Metals and trade safety. Operation and maintenance of tools and machinery. Selection and installation of fasteners, hangers, and supports. Trade calculations including denominate numbers and metric, linear, square, volume, and weight measurements. Stretchouts and geometric figures. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC111   0.5 Credit   0.5 Period
Drawings and Detail Sheets
Drawings, detail sheets and field sketches. Parts and types of drawings, materials, specifications and special treatments. Includes drawing procedures and sketch applications. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC112   1 Credit   1 Period
Piping Systems-Hangers and Supports
Types of piping systems, thermal expansion and insulation. Type and uses of pipe hangers and supports. Placement and installation of hangers and supports. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC113   1 Credit   1 Period
Rigging for Pipefitters
Selection, inspection, use and maintenance of blocks and tackles, chain hoists, come-alongs, jacks and tuggers. Heavy rigging hardware and lifting capacity charts. Procedures for balancing Loads and rigging pipes and valves. Planning the rigging job. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC114   5 Credits   5 Periods
Sheet Metal: Insulation, Air, Layout and Fabrication
Purpose and installation of air distribution accessories. Thermal and acoustic insulation, fibrous glass duct liner and fiberglass blanket and fiberglass pipe and flexible foam insulation. Sheet metal layout and processes, terminology, tools, and safety. Parallel and radial line development and triangulation. Layout and fabrication of ductrun fittings. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator

MEC115   1.5 Credits   1.5 Periods
Intermediate Excavation and Underground Pipe Installation
Terminology related to excavation and underground pipe installation. Identification and use of shoring materials and premanufactured support systems. Installation of vertical shoring. Determination of the fall of sewer lines. Grades and elevation of trenches. Backfilling procedures. Equipment and procedures for underground pipe installation. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC116   1 Credit   1 Period
Pipefitting Blueprints and Specifications
Reading and interpretation of piping drawings. Tracing piping runs through several drawings. Material take-offs for basic piping configurations. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC117   4 Credits   6 Periods
Socket and Butt Weld Pipe Fabrication
Socket and butt weld piping including materials, fittings and drawings. Use of oxyacetylene torch for cutting plate steel, holes and pipe. Pipe end preparation including length determination, backing rings, clamps, alignment tools and procedures. Determining pipe length and aligning fittings. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC118   5 Credits   5 Periods
Residential and Industrial Plumbing IV
Properties of water and plumbing traps. Air, air chamber, and sizing. High and low level pressure measurement. Manometer, gauge selection and use. Vibration, turbulence, and water hammer. Roof, floor and area drains. Oil and gas fuel systems. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC119   1 Credit   1 Period
Basic Safety
Overview of safety rules and procedures for working on construction job sites. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC120   1.5 Credits   1.5 Periods
Basic Calculations for Construction
Addition, subtraction, multiplication and division of whole, decimal, fractional and metric numbers. Metric units of length, weight, volume and temperature. Metric system as it relates to the construction trade. Basic algebraic operations and equations. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC121   1 Credit   1 Period
Introduction to Hand and Power Tools
Overview of the use, maintenance and safety procedures for common hand and power tools. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC122   1 Credit   1 Period
Rigging Safety and Equipment
Rigging safety, equipment and inspection. Includes crane hand signals, common rope knots, types of derricks and cranes and safety procedures for rigging and moving materials and equipment. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC123   1 Credit   1 Period
Introduction to Blueprints
Basic concepts of blueprints, including terms and symbols, grid line systems and blueprint production techniques. Dimensions and blueprint reading. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC124   5 Credits   5 Periods
HVAC IV: Equipment, Devices, Compressors and Pumps
Heat transfer and human comfort. Humidifiers and humidity. Air filters and air filter friction loss. Metering devices and expansion valves. Thermal expansion valves. Compressors and heat pumps. Installation, adjustment, replacement, service, troubleshooting. Reverse-cycling. Leak detection, evacuation, recovery, and charging heating, ventilating, and air conditioning (HVAC) systems. Service equipment of HVAC systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC126   5 Credits   5 Periods
Sheet Metal: Trade Calculations
Advanced trade calculations. Fitting blanks and stretchouts. Protractors, vernier calipers and micrometers. Piping practices and radial line development. Bend allowances, soldering tools and materials. Blueprints and drawings. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC128   5 Credits   5 Periods
SMACNA Manuals and Standards
Sheet Metal and Air Conditioning Contractors National Association (SMACNA) trade standards, codes and ordinances. SMACNA manuals. Duct fabrication standards, reference charts and tables. Tie rods and longitudinal seams. Insulation including types and installation procedures. Roof design and drainage systems, weather sealing and SMACNA flashing recommendations. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC132   5 Credits   5 Periods
Construction Pipe Trades III
Intermediate trade calculations and measuring devices. Pipe drawings and detail sheets. Occupational Safety and Health Administration (OSHA) safety regulations. Soil properties. Types of excavations and underground pipe. Installation and backfilling excavations. Handling and storage of underground pipe. Threaded piping systems. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC134   5 Credits   5 Periods
Construction Pipe Trades IV
Rigging procedures and heavy hardware. Lifting and balancing loads. Capacity charts and pipe drawings. Threaded pipe fabrication. Equivalent-conversion tables and take-outs. Oxyacetylene torch set up, lighting, and cutting. Backing rings and alignment. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC139   0.5 Credit   0.5 Period
Basic Piping Systems
Types of materials used to manufacture pipe. Specific applications of different types of pipe including advantages and disadvantages. Methods of joining pipe, including: welding, flanging, threading, and gluing. Identification and use of pipe supports and hangers. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC150   2 Credits   2 Periods
Hand and Power Tools and Motorized Equipment
Selection, use and care of hand and power tools specific to the pipefitting trade. Identification, use, safety procedures and maintenance of motorized equipment utilized in pipefitting. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC151   0.5 Credit   0.5 Period
Ladders and Scaffolds
Use, safety precautions, and maintenance of ladders and scaffolds including set-up. Maintenance procedures, safety checks, Occupational Health and Safety Administration (OSHA) standards and hazard abatement. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC201   5 Credits   5 Periods
HVAC V: Maintenance and Troubleshooting
Tools, instruments, equipment, components, procedures, materials, and tasks for preventative maintenance and troubleshooting of heating, ventilating and air conditioning (HVAC) systems. Microprocessor, gas, electric, and oil heating systems. Furnaces, electric heater packages for cooling, and heat pumps. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC202   5 Credits   5 Periods
Advanced Construction Pipe Trades
Pipe blueprints, drawings, and specifications. Pipefitting standards and codes. Advanced trade calculations and thermal expansion. Tables of equivalents and conversions. Motorized equipment: pumps, drain cleaners, manlifts, cable lifts. Construction vehicles. Pretest requirements. Above ground pipe installation. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC203   5 Credits   5 Periods
HVAC VI: Troubleshooting Heating and Cooling Systems
Cooling and heating systems; heat pumps, Heating, Ventilation and Air Conditioning (HVAC) systems and accessories. Commercial heating and cooling systems. Air and water balancing systems. Steam systems. Customer relations. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

MEC204   5 Credits   5 Periods
Advanced Construction Pipe Trades II
Piping systems, hangers and supports, thermal expansion, insulation. Residential and commercial plumb drawings. Rigging equipment, load, and weight. Assembly and fabrication. Vessel trim, springs and supports. Valves, materials, fixtures. Aboveground pipe, pipe sleeves, and floor penetrations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC205   5 Credits   5 Periods
Residential and Industrial Plumbing V
Gas and plumbing code requirements. Residential, commercial, industrial, institutional plumbing practices. Fixtures, appliances, fixture fittings, valves, and trim. Gas piping installation, pipe sizing, pipe fittings and connections, appliances, regulators, meters, controls, and corrosion. Advanced plumbing calculations. Specific plumbing systems and specialized water systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC206   5 Credits   5 Periods
HVAC VII: Air Quality and Energy Conservation
Advanced blueprint reading. Architectural, plumbing, mechanical, and electrical drawings. Submittal, transfer and design. Indoor air quality. Heating, Ventilating and Air Conditioning (HVAC) equipment, components, accessories and systems. Introduction to computers and computer networks. Energy conservation and management. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC207   5 Credits   5 Periods
Residential and Industrial Plumbing VI
Advanced plumbing calculations. Offsets, tank capacities, volume and weight, rations and proportions, sizing, and piping expansion. Energy, temperature, heat transfer, stratification, multiple heaters, and recirculation. Basic electricity and troubleshooting. Safety, current, motors, circuits, humidity and condensation. Plumbing, electrical, heating/ventilation/air conditioning (HVAC), and detail blueprints. Specialized plumbing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC208   5 Credits   5 Periods
Residential and Industrial Plumbing VII
General considerations, leaks and drainage. Installation, repair, and service of residential, commercial, industrial, and institutional heating systems. In-ground and above-ground water piping, drainage, waste and vent. Fuel gas piping, lead products, water heaters, waste stoppages, and water hammer. Blueprint reading. Installation of waste systems. Interceptors and backwater valves. Heating systems. Water protection, and conservation in heating systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC210   0.5 Credit   0.5 Period
Steam Traps
Use of steam traps in high and low pressure steam systems. Specific types and applications, installation, troubleshooting and maintenance. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC211   **0.5 Credit**   **0.5 Period**
In-Line Specialties for Pipefitting
Specific in-line specialty equipment for pipefitting including purpose, function and safety precautions. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC212   **1 Credit**   **2 Periods**
Maintaining Valves
Identification of valves and component parts. Operating principles, disassembly, installation, packing and repacking valves. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC213   **2 Credits**   **4 Periods**
Specialty Piping and Hot Taps
Specialty piping including flared and compression joining. Identifying, sizing and installing fittings. Brazing and soldering, calculating and bending pipe. Glass lined pipe, also hydraulic fitted compression joints and grooved pipe systems. Hot taps including identification and abatement of hazards, types and installation of fittings, hot tap machines and stopples. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC214   **1 Credit**   **1 Period**
Stress Relieving and Aligning Pipes
Identifying misalignments and causes of stress in piping systems. Methods of proper alignment and stress relief. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC218   **5 Credits**   **5 Periods**
Residential and Industrial Plumbing VIII
Hydraulic and plumbing theory. Pumps, uses, and design. Pump performance curves, pump installation, and maintenance. Advanced blueprint reading, sketching, and material estimating. Plumbing code. Installation code requirements. Specialty plumbing. Prerequisites: MEC208.

MEC224   **5 Credits**   **5 Periods**
HVAC VIII: Water Treatment and HVAC Design
Water problems, remedies, maintenance, and treatment. Commercial water and steam systems. Inspection and evaluation. System start up and shutdown. Cooling towers; evaporative condensers, boilers, chillers, air handlers and forced air systems. Components, accessories and design factors. Refrigerants and oils. Load calculations. Commercial and industrial refrigeration. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC226   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems I
Field measuring and fitting. Air and duct systems and air source equipment. Welding practices, and arc-welding procedures. Brazing and flame cutting. Mechanical refrigeration fundamentals, mechanical systems, and heat pumps. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC228   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems II
Principals of airflow. Comprehensive blueprint and specification reading. Fabrication and triangulation. Roofing materials, gutters, downspouts, and chimneys. Installation techniques of elbows, outlet tubes, gutters and gutter outlets, and roof, chimney, and wall flashing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC230   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems III
Estimating labor, materials, equipment, and delivery. Staff organization and staff relations. Shop production. Coordination with other trades. Air balance principle and systems. Layout and fabrication methods. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC232   **5 Credits**   **5 Periods**
Advanced Construction Pipe Trades III
Advanced pipe fabrication and layout. Calculations of offsets. Tank coils, ordinate lines, cutback lines. Tables, formulas, and resource materials. Mitered turns, lateral dimensions. True Wye, Dummy Legs and Trunions. Work planning, material needs, and inspections. Supervisory roles. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC234   **5 Credits**   **5 Periods**
Advanced Construction Pipe Trades IV
Pressure steam systems. Steam trap types, selection, placement, installation, maintenance, troubleshooting. Strainers. In-line specialty equipment. Specialty piping equipment. Hot tap types, fittings, installation, and machines. Valves and components. Thermal expansion and stress relief. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC240   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems IV
Layout and fabrication of louvers, dampers and access doors. Room and building ventilation. Moisture, humidity, temperature, energy and air flow. Fume and exhaust systems and components. Crew Leader skills. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC250   **0.5 Credit**   **0.5 Period**
Advanced Piping Blueprints/Drawings
Reading and interpreting piping and instrumentation drawings (P&IDs) and isometric drawings. Pipefitting standards, codes and specifications. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC251   **1 Credit**   **1 Period**
Advanced Trade Calculations-Pipefitter
Thermal expansion and the use of tables of equivalents and conversion tables. Right angle trigonometry and calculation of take-outs using trigonometry. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC252   **2 Credits**   **2 Periods**
Motorized Equipment/Testing-Piping
Use and safety requirements of hydrostatic pumps, hydroblaster pumps, drain cleaners, manlifts, cable lifts and construction vehicles. Performing pretest requirements, service and flow tests, hydrostatic tests and steam blow tests. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC253   1 Credit   2 Periods
Aboveground Pipe Installation
Identifies types of pipe, flanges, gaskets and bolts. Includes step-by-step procedures for installing pipe sleeves and floor penetrations. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC254   2 Credits   2 Periods
Field Routing, Trim and Springs
Field run specifications, rigging equipment needs, load weights, assembly systems and support needs. Also includes fabricating field run piping, vessel trim and identifying, selecting and installing spring can supports. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC255   1.5 Credits   1.5 Periods
Valve Installation
Identifying and installing specific types of valves. Includes procedures for storage and handling. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC256   1 Credit   3 Periods
Basic Plumbing
Plumbing fixtures, drainage fixture unit ratings and installation procedures. Cutting and assembling cast iron soil pipe with lead-and-oakum joints, compression joints and no-hub joints. Safety stressed. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MEC257   4 Credits   6 Periods
Advanced Pipe Fabrication
Layout and fabrication of specific piping systems including: calculating and laying out simple offsets. Calculating three- line, 45 degree equal and unequal-spread offsets, laying out and fabricating tank coils and fabricating mitered turns. Laying out ordinate and cutback lines. Laying out and fabricating 90 degree mitered turns, 45 degree laterals, true "wye" fittings and "dummy legs" and "trunions". Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEC258   1 Credit   1 Period
Work Planning and NDE Testing
Procedures for planning daily work activities for pipefitters. Includes: coordinating with other crafts, establishing safe working conditions and field checking. Non-destructive (NDE) examination of materials including: visual inspections, prefit inspections, and inspecting root passes. Inspecting completed welds using: borescopes, flexible fiberscopes and video scopes. NDE weld tests including: dye penetrant test, magnetic particle test, ultrasonic test, radiography and conductivity tests. Prerequisites: Registered Apprentice status or permission of the apprenticeship coordinator.

MEDICAL TRANSCRIPTION (MTR)

MTR101   3 Credits   5 Periods
Medical Transcription Applications
Introduction to entering and formatting medical reports. Emphasis on accuracy, spelling and punctuation. Operation and maintenance of dictation and transcription equipment. Use of standard reference materials. Prerequisites: (Typing proficiency at 50 WPM or OAS103AA and OAS103AB) and (BPC/OAS130DK, HCC130, and HCC145)

and admission to Medical Transcription program or permission of department or division.

MTR103   2 Credits   2 Periods
Pharmacology for Medical Transcriptionists
Drug standards, sources, prescription symbols and abbreviations. Basic functions of body systems relevant to commonly prescribed drugs. Emphasis on spelling of drug names and utilization of references books. Prerequisites: (HCC130 and HCC145) or permission of department.

MTR105   3 Credits   3 Periods
Medical Transcription Style and Grammar
The study, synthesis, and application of the rules of English language and medical transcription style as reflected by the AHDI (Association for Healthcare Documentation Integrity) Book of Style or other medical style manuals such as the AMA (American Medical Association) Manual of Style. Prerequisites: None.

MTR190   3 Credits   3 Periods
Medical Transcription Technology
Overview of computers, electronic medical records, speech recognition programs, and keyboarding shortcuts as used in medical transcription. Prerequisites: None.

MTR190AA   1 Credit   1 Period
Medical Transcription Technology - Speech Recognition
Overview of speech recognition programs, as used in medical transcription. Prerequisites: None.

MTR190AB   1 Credit   1 Period
Medical Transcription Technology - Electronic Medical Records
Overview of electronic medical records as used in medical transcription. Prerequisites: None.

MTR190AC   1 Credit   1 Period
Medical Transcription Technology - Keyboarding Shortcuts
Overview of computers and keyboarding shortcuts as used in medical transcription. Prerequisites: None.

MTR201   3 Credits   5 Periods
Physicians Office Transcription
Transcription of doctor's office medical records suitable for permanent record of patient care. Transcriptions proofreading skills. Emphasis on proper formatting, accuracy, speed and skill building. Utilization of appropriate resources and medical-legal principles. Prerequisites: Admission to Medical Transcription program or MTR101 and MTR103 or permission of department.

MTR202   3 Credits   5 Periods
Medical-Surgical Transcription
Transcription of inpatient medical and surgical documents suitable for permanent records of patient care. Transcription proofreading and editing dictation. Application of medico-legal principles of inpatient and outpatient clinical settings. Prerequisites: Admission to Medical Transcription program or MTR101 and MTR103 or permission of department.

MTR203   3 Credits   5 Periods
Diagnostic Therapeutic Transcription
Transcribing reports of diagnostic and therapeutic areas of medicine from both inpatient and outpatient health care services. Clarifying and

editing dictation discrepancies. Prerequisites: Admission to Medical Transcription program or MTR101 and MTR103 or permission of department.

MTR221   3 Credits   5 Periods
Advanced Office Transcription
Advanced transcription of physician's office medical records suitable for permanent record of patient care. Transcription proofreading skills. Emphasis on proper formatting, accuracy, speed and skill building. Utilization of appropriate resources and medico-legal principles. Prerequisites: MTR201 or permission of department.

MTR222   3 Credits   5 Periods
Advanced Surgical Transcription
Advanced transcription of surgical documents suitable for permanent record of patient care. Transcriptionist proofreading and editing dictation. Utilization of appropriate resources and medico-legal principles. Prerequisites: MTR202 or permission of department.

MTR223   3 Credits   5 Periods
Advanced Diagnostic Transcription
Transcribe increasingly complex reports of diagnostic and therapeutic areas of medicine from both inpatient and outpatient health care services. Clarifying and editing dictation discrepancies. Prerequisites: MTR203.

MTR230   3 Credits   5 Periods
Dictation by Non-native Speakers
Transcription of medical and surgical documents originated by dictators who speak English as a second language (ESL). Transcriptionist proofreading and editing dictation. Application of medico-legal principles. Prerequisites: MTR201, MTR202 and MTR203 or permission of department.

MTR270   3 Credits   3 Periods
Advanced Medical Terminology
Comprehensive human anatomy and physiology medical terminology according to body systems. Terminology and abbreviations form pharmacology, surgery, psychiatry, oncology, radiology, laboratory and radiotherapy specialties. Emphasis on spelling and pronunciation. Prerequisites: Admission to the Medical Transcription Program, or HCC145, or permission of the instructor.

MTR271   3 Credits   5 Periods
Pathophysiology for Medical Transcription
The study of common human diseases and conditions, including prevention, etiology, signs and symptoms, diagnosis and treatment modalities (including surgery), prognoses, and using medical references for research and verification. Prerequisites: BIO160, HCC145, MTR101 and MTR103.

MTR273   1 Credit   1 Period
Medical Transcription Seminar
Development of professional work behaviors, analysis of dynamics of work environment. Exploration of professional development and career opportunities. Prerequisites: (MTR201, MTR202, MTR203, and MTR270), or permission of department or division.

MTR273AA   1 Credit   5 Periods
Medical Transcription Practicum
Applied medical transcription in the work environment. Reinforcement and broadening of skills and knowledge of medical transcription. Prerequisites: (MTR201, MTR202, MTR203, and MTR273), or permission of department or division. MTR273AA may be repeated for a total of two (2) credit hours.

MTR273AB   2 Credits   10 Periods
Medical Transcription Practicum
Applied medical transcription in the work environment. Reinforcement and broadening of skills and knowledge of medical transcription. Prerequisites: (MTR221, MTR222, MTR223, MTR230, and MTR273), or permission of department or division.

MTR280   2 Credits   2 Periods
Medical Transcription Exam Review
Medical terminology review, including prefixes, suffixes, combining forms, word roots, plural forms, medical abbreviations, acronyms, eponyms, antonyms, and homonyms. Review of punctuation and grammar rules, common homonyms, synonyms and antonyms. Anatomy and physiology review including structure and function of body organs and systems. Common disease processes. Purpose and content of the healthcare records. Prerequisites: Completion of a recognized medical transcription program or a minimum of one-year work experience as a medical transcriptionist.

MICROSOFT TECHNOLOGY (MST)

MST140   3 Credits   4 Periods
Microsoft Networking Essentials
Emphasis on local area network with overview of wide area networks. Includes terminology, hardware and software components, connectivity, network architecture, packet structure, topologies, communication standards and protocols, and security issues. Preparation for Microsoft certification examination. Prerequisites: None. Recommend BPC110 or CIS105, and BPC121AB.

MST150   3 Credits   4 Periods
Microsoft Windows Professional
Knowledge and skills necessary to perform day-to-day administration tasks in a Microsoft Windows-based network. Preparation for Microsoft certification examination. Prerequisites: None. CIS190, or CNT140, or MST140 suggested but not required.

MST150SV   3 Credits   4 Periods
Microsoft Windows 7 Configuration
Knowledge and skills necessary to perform installation and day-to-day support of the Microsoft Windows 7 operating system. Prerequisites: None. CIS190, or CNT140AA, or MST140 suggested but not required.

MST152   4 Credits   5 Periods
Microsoft Windows Server
Knowledge and skills necessary to install, configure, customize, optimize, network, integrate, and troubleshoot Windows server. Preparation for Microsoft certification examination. Prerequisites or Corequisites: Any MST150 course or permission of instructor.

MST152DB   **4 Credits**   **5 Periods**
Microsoft Windows 2003 Server
Knowledge and skills necessary to install, configure, customize, optimize, network, integrate, and troubleshoot Microsoft Windows 2003 Server. Preparation for Microsoft certification examination. Prerequisites or Corequisites: Any MST150 course or permission of instructor.

MST155   **3 Credits**   **4 Periods**
Implementing Windows Network Infrastructure
Knowledge and skills to install, configure, maintain, and support a Microsoft Windows network infrastructure. Preparation for Microsoft certification examination. Prerequisites or Corequisites: Any MST152 course or permission of instructor.

MST157   **3 Credits**   **4 Periods**
Implementing Windows Directory Services
Knowledge and skills to install, configure, and administer Microsoft Windows Active Directory directory services. Preparation for Microsoft certification examination. Prerequisites: Any MST152 course or permission of instructor.

MST232   **3 Credits**   **4 Periods**
Managing a Windows Network Environment
Knowledge and skills necessary to administer Windows network operating systems. Preparation for Microsoft certification examination. Prerequisites: MST140, MST150, and MST152, or permission of instructor.

MST242   **4 Credits**   **5 Periods**
Microsoft Exchange Server
Knowledge and skills required to plan, implement, and administer Microsoft Exchange Server. Preparation for Microsoft certification examination. Prerequisites: Any MST152 course or permission of instructor.

MST244   **3 Credits**   **4 Periods**
Microsoft SQL Server Administration
Knowledge and skills required to install, configure, and administer Microsoft SQL server. Preparation for Microsoft certification examination. Prerequisites: Any MST152 course, or MST170, or permission of instructor.

MST255   **3 Credits**   **4 Periods**
Designing Windows Network Infrastructure
 Knowledge and skills to create a networking services infrastructure design that supports network applications and the needs of an organization. Preparation for Microsoft certification examination. Prerequisites or Corequisites: MST155 or permission of instructor.

MST259   **3 Credits**   **4 Periods**
Designing Windows Network Security
Knowledge and skills to analyze business requirements and processes to design a security solution for a Microsoft Windows network. Preparation for Microsoft certification examination. Prerequisites or Corequisites: MST157 or permission of instructor.

MILLWRIGHTING: APPRENTICESHIP (MWR)

MWR101   **2 Credits**   **2 Periods**
Introduction to Millwrighting I
History of millwrighting. Pre-industrialization trade, post-industrialization trade, industrial revolution. Structure of the organization. History, significance and benefits of labor unions. Successful and efficient labor relations. Millwrighting in relation to other construction trades. Building trades organizations. Prerequisites: Indentured apprentice status or permission of the apprenticeship coordinator.

MWR102   **2 Credits**   **2 Periods**
Introduction to Millwrighting II: OSHA Safety
Safe and proper use of hand and power tools. Safe work habits, first aid, and cardiopulmonary resuscitation (CPR) according to Occupational Safety and Health Administration (OSHA) regulations. Prerequisites: (MWR101 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR103   **2 Credits**   **2 Periods**
Machinery Installation and Erection I
Basic machine shop skills, use of hand and power tools, machining equipment, and precision instruments in several practical exercises preparation for mastery of the skills. Machining operations involving the use of precision measuring, layout and machining procedures. Review of fundamental machine shop activities. Prerequisites: (MWR101, MWR102, and registered apprentice status) or permission of the apprenticeship coordinator.

MWR104   **2 Credits**   **2 Periods**
Machinery Installation and Erection II
Machinery installation skills used in manufacturing applications. Identification of component locations; measurements and tolerances; installation requirements and alignment of parts using machine drawings. Review of safety, precision measuring tools, rigging tasks, and machinery fastening methods. Prerequisites: (MWR103 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR105   **2 Credits**   **2 Periods**
Millwrighting General Skills
Basic machine shop skills, use of hand and power tools, machining equipment, and precision instruments in several practical exercises preparation for mastery of the skills. Machining operations involving the use of precision measuring, layout and machining procedures. Review of fundamental machine shop activities. Prerequisites: (MWR101, MWR102, and registered apprentice status) or permission of the Apprenticeship coordinator.

MWR106   **2 Credits**   **2 Periods**
Math for Millwrighting, Hand, Power and Precision Tools
Fundamental operations with whole numbers, common fractions, decimals, percentages, and ratio and proportion. Measurement tools. Fundamentals of Algebra, linear equations, includes applied math problems. Use, maintenance and safety procedures for common hand and power tools used in the construction industry. Prerequisites: (MWR103 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR107   2 Credits   2 Periods
Drives, Pulleys and Belts
Identification, application, and installation skills for typical power drive systems. Demonstrations and practice exercises on the belt, chain and gear drives. Review of safety, rigging tasks, machinery fastening methods, and mechanical shop drawings. Prerequisites: (MWR104 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR108   2 Credits   2 Periods
Blueprint Reading for Millwrighting I
Types of blueprints, sketching and basic print reading. Symbols for materials, construction details, standards, and specifications. Prerequisites: (MWR101, MWR102, and registered apprentice status) or permission of the apprenticeship coordinator.

MWR109   2 Credits   2 Periods
Turbine Familiarization
Function and performance of a General Electric Frame 5 Gas Turbine. Component descriptions and machine drawings, assembly/disassembly tasks and key bolting procedures. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MWR201   2 Credits   2 Periods
Optics and Machinery Alignment
Terms, characteristics, and operating principles for the transit and laser levels. Procedures for establishing machinery and equipment elevation and alignment. Measuring angles, using degrees, minutes, and seconds on veneer scales. Setting up levels, determining benchmarks, taking and recording elevation readings. Prerequisites: (MWR101, MWR102, and registered apprentice status) or permission of the apprenticeship coordinator.

MWR202   2 Credits   2 Periods
Conveyor Systems
Proper layout and component alignment of machinery, equipment, and conveyor systems. Identification of proper alignment procedures. Belt splicing. Analysis of effects of improper installation on maintenance and lifespan of equipment and conveyor systems. Prerequisites: (MWR104 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR203   5 Credits   5 Periods
Specialty Machinery I
Fundamentals and theory of hydraulics and pneumatics. Types, components, construction, and assembly of pumps and compressors. Inner workings of industrial pumps and compressors. Auxiliary equipment and accessories. Prerequisites: MWR202 and registered apprentice status or permission of the Apprentice coordinator.

MWR204   5 Credits   5 Periods
Specialty Machinery II
Design, terminology, installation and operation of centrifugal and axial draft fans, monorail systems, steam turbines and generators. Layout and fabrication of monorail hangers, turns, and dips. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

MWR205   2 Credits   2 Periods
Machinery Shaft Alignment
Terms, characteristics, and methods for aligning machine shafts. Procedures for sequence performance, conventional dial indicator and computer aided. Setting up indicators, taking and recording indicator readings and determining alignment correction. Prerequisites: (MWR101, MWR102, and registered apprentice status) or permission of the apprenticeship coordinator.

MWR206   2 Credits   2 Periods
Rigging Hardware and Procedures
Lifting theory and practical rigging methods and procedures, design, characteristics, and safe working load of lifting hardware. Rigging attachment procedures, lifting equipment, limits of operation and communication practices. United Brotherhood of Carpenters (UBC) rigging qualification cards. Prerequisites: (MWR105 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR207   2 Credits   2 Periods
Advanced Precision Alignment Instruments
Computer aided transit and laser levels. Procedures for using Computer-aided Design (CAD), Global Positioning System (GPS) and Satellite instruments and computer programs using metric circle, GPS coordinates, degrees, minutes, and seconds on veneer scales. Utilization of computer programs for layout. Prerequisites: (MWR201 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR208   2 Credits   2 Periods
Pumps, Compressors and Flow Seals
Fundamentals and theory of hydraulics and pneumatics. Types, components, construction, and assembly of pumps and compressors. Inner workings of industrial pumps and compressors. Design and installment of auxiliary equipment and accessories. Prerequisites: (MWR206 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR209   2 Credits   2 Periods
Introduction to Wind Turbines
Design, function and installation of wind turbine equipment. Methods, sequences and procedures for housings, bolting, power, drive assembly and other components. Jobsite safety, print interpretation, material identification, and use of system devices and maintenance criteria. Completion of hands-on component installation projects. Prerequisites: (MWR109 and registered apprentice status) or permission of the apprenticeship coordinator.

MWR210   2 Credits   2 Periods
Introduction to Solar Installations
Characteristics, design, and installation of concentrated photovoltaic (CPV) components. Methods, sequences, and procedures for panel and tracking assembly including jobsite safety, print interpretation, material identification, and use of system devices and testing criteria. Construction of and troubleshooting of selected solar installation projects. Prerequisites: (MWR106, MWR108, and registered apprentice status) or permission of the apprenticeship coordinator.

MUSIC: HISTORY/LITERATURE (MHL)

MHL143   3 Credits   3 Periods
Music in World Cultures
Non-European musical traditions including the study of music in rituals, musical instruments and the impact of cultures on musical styles. Prerequisites: None.

MHL153   3 Credits   3 Periods
Rock Music and Culture
History of Rock music and how cultural, social, political, and economic conditions have shaped its evolution. Prerequisites: None.

NETWORKING TECHNOLOGY (NET)

NET242   3 Credits   4 Periods
Network Security
Overall security based on security policy design and management. Emphasis on security technologies, appliances and security router configuration. Prerequisites: CNT170.

NET248   3 Credits   4 Periods
Network Servicing and Support
Maintaining and troubleshooting networks. Topics includes customer service philosophies, environmental factors, inter-network support, troubleshooting techniques, diagnostic utilities, common networking problems. Prerequisites: (NET246, NET271AA, and NET271AB) or departmental approval.

NUCLEAR MEDICINE TECHNOLOGY (NUC)

NUC100   1 Credit   1 Period
Introduction to Nuclear Medicine Technology
Role of the Nuclear Medicine Technologist Job duties, responsibilities, working conditions and work environments in the inpatient clinical settings. Certification and licensing requirements for the Nuclear Medicine Technologist, shadowing experience specific to the nuclear medicine department. Prerequisites: None.

NUC110   2 Credits   2 Periods
Radiation Safety for Nuclear Medicine
Sources and types of radiation in nuclear medicine. Units of radiation measurement. Conversions from traditional to system international units. Protection devices, operating equipment (including ancillary devices), and federal and state laws regarding radiation safety. Radiation monitoring devices. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC112   1 Credit   3 Periods
Fundamentals of Nuclear Medicine Lab
History of nuclear medicine. Use, safety and maintenance of nuclear medicine equipment. Concepts and physical principles governing radioactivity and the interaction of radiation with matter. Terminology pertinent to nuclear medicine. Foundational math concepts for nuclear medicine calculations. Study skills. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC114   3 Credits   3 Periods
Fundamentals of Nuclear Medicine
History of nuclear medicine. Use, safety and maintenance of nuclear medicine equipment. Concepts and physical principles governing radioactivity and the interaction of radiation with matter. Terminology pertinent to nuclear medicine. Foundational math concepts for nuclear medicine calculations. Study skills. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC116   3 Credits   3 Periods
Nuclear Medicine Imaging I
Radiopharmaceuticals including contraindications, adverse reactions, and patient preparation. Indications, equipment, procedure and processing for routine bone imaging, 3 and 4 phase imaging and single photon emission computed tomography (SPECT) and SPECT/CT. Image interpretation and diagnostic and/or prognostic value of study. Respiratory system studies to include perfusion, gas ventilation, aerosol ventilation, combined ventilation/perfusion study, quantitative lung study. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC120   1.5 Credits   1.5 Periods
Radiopharmaceutical/Pharmaceutical Administration for the Nuclear Medicine Technologist
Techniques for the administration of radiopharmaceuticals and pharmaceuticals used by the nuclear medicine technologist. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC122   1 Credit   3 Periods
Nuclear Medicine Imaging I Lab
Protocols for opening/operating in a nuclear medicine department. Quality control, radiation safety, performance of bone scans, lung scans, and genitourinary procedures. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC124AA   1.5 Credits   1.5 Periods
Nuclear Medicine Theory I: Part A
Non-imaging instrumentation to include gas-filled detector systems, scintillation detection systems, statistics, nuclear counting statistics, and laboratory equipment. Imaging instrumentation to include planar scintillation cameras, multicrystal scintillation cameras, solid-state detector systems, single photon emission computed tomography (SPECT). Prerequisites: Admission to Nuclear Medicine Technology program.

NUC124AB   1.5 Credits   1.5 Periods
Nuclear Medicine Theory I: Part B
Imaging instrumentation to include quality control of imaging systems and maintenance of image archiving systems. Computers in instrumentation, types of computers, number systems, general structure of computer hardware, software, communications, data management, internet, nuclear medicine computer systems and quality control of these systems. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC126   3 Credits   3 Periods
Nuclear Medicine Imaging II
Endocrine/exocrine, gastrointestinal/accessory organ, and imaging. Review of related body system anatomy, physiology and pathology. Endocrine/exocrine studies to include thyroid uptake, thyroid scan,

thyroid therapy, parathyroid imaging, adrenal imaging, and lacrimal duct imaging. Gastrointestinal/accessory organ studies to include salivary gland, esophageal motility/transit and reflux, gastric emptying, helicobacter pylori detection, liver/spleen imaging, hemangima detection, hepatobiliary imaging, gastrointestinal hemorrhage, Meckel's diverticulum, Le Veen Shunt, and intrahepatic pump study. Genitourinary system studies to include renal perfusion, renogram, glomerular filtration rate (GFR), effective renal plasma flow (ERPF), renal scan for morphology, voiding cystogram, testicular imaging. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC130   1.5 Credits   1.5 Periods
Patient Care for the Nuclear Medicine Technologist
Communication and interaction skills, patient assessment, procedures involving transport, medical records, infection control, emergency, safety, health care ethics and legal issues. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC140   3 Credits   3 Periods
Clinical Pathology for Diagnostic Imaging
Disease etiology and impact on the human body. Physiologic effects of disease on body systems. Role of Diagnostic Medical Imaging (DMI) modalities in the diagnosis and treatment of selected disease processes. DMI as part of the health care team. Cultural implications in the prevention and treatment of disease. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC150   2 Credits   2 Periods
Fundamentals of Computed Tomography
Introduction to principles and operation of computed tomography (CT) scanner. Physics processes, instrumentation components, imaging acquisition, reconstruction and display for computed tomography imaging. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC170AA   1.5 Credits   1.5 Periods
Nuclear Medicine Cardiac Imaging I
Cardiovascular anatomy, physiology and pathology as it relates to cardiac system imaging. Cardiac stress and rest testing, myocardial perfusion and viability, equilibrium radionuclide angiograph (ERNA or MUGA or RVG). First pass angiography, infarct imaging, major vessels flow studies and detection of deep vein thrombosis. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC170AB   1.5 Credits   1.5 Periods
Nuclear Medicine Cardiac Imaging II
Cardiovascular imaging instrumentation, procedures, and processing. Radiopharmaceuticals and interventional drugs used in cardiovascular imaging. Non-pharmacologic stress testing. Patient care for the cardiac patient including procedures and pharmaceuticals. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC212   2 Credits   10 Periods
Clinical Practicum I
Orientation to program and facility policies and procedures and departmental organization. Observation of patient care and clinical experiences including radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC213   1 Credit   3 Periods
Nuclear Medicine Image Evaluation I
Emphasis on bone and respiratory system imaging. Evaluation of images related to clinical situations and procedures including patient history, patient preparation, name and energy of radiopharmaceutical, method of localization, dosimetry, and method of clearance. Normal and abnormal distribution. Need for additional views and/or procedures. Technical limitations, protocol and equipment parameters and procedure results. Sectional human anatomy. Emphasis on the upper and lower extremities. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC222   3 Credits   15 Periods
Clinical Practicum II
Orientation to facility policies and procedures and departmental organization. Skill development with ongoing reinforcement and broadening of knowledge base related to patient care and the roles and responsibilities of the nuclear medicine technologist at the beginner level. Initial and continued observation, assistance and performance of patient care and technologist duties in the areas of radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures, under strict supervision. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC223   1 Credit   3 Periods
Nuclear Medicine Image Evaluation II
Emphasis on genitourinary and endocrine imaging. Evaluation of images related to clinical situations and procedures including patient history, patient preparation, name and energy of radiopharmaceutical, method of localization, dosimetry, and method of clearance. Normal and abnormal distribution. Need for additional views and/or procedures. Technical limitations, protocol and equipment parameters and procedure results. Sectional human anatomy. Emphasis on the brain, cranium and facial bones. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC232   3 Credits   15 Periods
Clinical Practicum III
Orientation to facility policies and procedures and departmental organization. Reinforcement and broadening of knowledge base related to patient care and the roles and responsibilities of the nuclear medicine technologist at the advanced beginner level. Observation, assistance and performance of patient care and technologist duties in the areas of radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures, under moderate supervision. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program. Corequisites: NUC233.

NUC233   1 Credit   3 Periods
Nuclear Medicine Image Evaluation III
Emphasis on hematopoietic, cardiovascular and central nervous system imaging. Evaluation of images related to clinical situations and procedures including patient history, patient preparation, name and energy of radiopharmaceutical, method of localization, dosimetry, and method of clearance. Normal and abnormal distribution. Need for additional views and/or procedures. Technical limitations, protocol

and equipment parameters and procedure results. Sectional human anatomy. Emphasis on the spine and neck. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC234   2 Credits   2 Periods
Nuclear Medicine Theory II
Practical methods of radiation protection, possession of radioactive materials, institutional oversight according to Nuclear Regulatory Commission (NRC) regulations. Radiation safety procedures and regulations, contamination, protection with radionuclide therapy and related NRC rules and regulations. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC236   3 Credits   3 Periods
Nuclear Medicine Imaging III
Nuclear medicine imaging studies of the central nervous system (CNS) hematological and in vitro nuclear medicine and immune system. Review of related anatomy, physiology and pathology. CNS imaging studies including cerebral vascular flow, planar brain imaging, functional brain single photon emission computed tomography (SPECT), brain tumor imaging, and cerebral spinal fluid studies. Immune system imaging studies including radiolabeled white blood cell studies, gallium, breast, and sentinel node imaging, radioimmunoscintigraphy, lymphoscintigraphy and Iodine-131 whole body imaging. Introduction to radionuclide therapy including intracavitary palliation, bone marrow palliation, palliation of metastatic bone pain and radiolabeled antibody therapies. Hematological and in vitro studies to include bone marrow imaging, Schillings test, plasma volume, red cell mass, total blood volume, T- cell survival, splenic imaging and radioassay. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC242   3 Credits   15 Periods
Clinical Practicum IV
Orientation to facility policies and procedures and departmental organization. Reinforcement and broadening of knowledge base related to patient care and the roles and responsibilities of the nuclear medicine technologist at the intermediate level. Observation, assistance and performance of patient care and technologist duties in the areas of radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures, under limited supervision. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC243   1 Credit   3 Periods
Nuclear Medicine Image Evaluation IV
Emphasis on imaging of oncological disorders and inflammatory processes. Evaluation of images related to clinical situations and procedures including patient history, patient preparation, name and energy of radiopharmaceutical, method of localization, dosimetry, and method of clearance. Normal and abnormal distribution. Need for additional views and/or procedures. Technical limitations, protocol and equipment parameters and procedure results. Sectional human anatomy. Emphasis on the thorax. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC244   3 Credits   3 Periods
Nuclear Medicine Theory III
Radiopharmacy and interventional drugs including radiation protection and regulations that reference radiopharmaceuticals. Quality control,

Food and Drug Administration (FDA) control of pharmaceuticals and the effects of reimbursement on the use of radiopharmacy design. Radiation exposure to nuclear medicine patients, adverse reactions, radiochemistry, and radionuclide generators. Preparation of Tc-99m labeled kits, dose determinations, birouting, elements of individual radiopharmaceuticals and interventional pharmaceuticals. Radiobiology including characteristics of radiation, sources of radiation, factors affecting cellular response to radiation, radiosensitivity of cell populations, tissue and systemic responses to radiation, effects of in-utero irradiation, late effects of radiation exposure, radiation doses and risk-to-benefit ratios. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC252   3 Credits   15 Periods
Clinical Practicum V
Orientation to facility policies and procedures and departmental organization. Reinforcement and broadening of knowledge base related to patient care and the roles and responsibilities of the nuclear medicine technologist at the advanced level. Focus on progression to independent level of function in the areas of patient care, radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC253   1 Credit   3 Periods
Nuclear Medicine Image Evaluation V
Emphasis on positron emission tomography (PET) therapy imaging and other studies new to the nuclear medicine imaging field. Evaluation of images related to clinical situations and procedures including patient history, patient preparation, name and energy of radiopharmaceutical, method of localization, dosimetry, and method of clearance. Normal and abnormal distribution. Need for additional views and/or procedures. Technical limitations, protocol and equipment parameters and procedure results. Sectional human anatomy. Emphasis on the abdomen and pelvis. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC262   2 Credits   10 Periods
Capstone Practicum
Emphasis on achievement of entry level nuclear technologist skill level in the areas of radiation protection, instrumentation imaging, non-imaging and computers, radiopharmacy, diagnostic and therapeutic procedures. Ethical and professional behaviors, Health Insurance Portability and Accountability Act (HIPAA) requirements. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC270   1 Credit   1 Period
Nuclear Medicine Scientific Method
Scientific research in the field of nuclear medicine. Abstract writing to include research study results, objectives, methods, observational and analytical techniques, and conclusion. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC272   2 Credits   6 Periods
Cardiac Practicum
Comprehensive, high level practical experience at a cardiac clinical site. Observation and cooperative work with indirect supervisory personnel in a coronary care setting. Technical cardiac procedures, patient care,

and radiation safety. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC280   3 Credits   3 Periods
Nuclear Medicine PET and PET/CT
Positron Emission Tomography (PET) and Integrated Positron Emission Tomography/Computed Tomography (PET/CT). Basic principles of operation and design of positron imaging systems and quality control necessary for the equipment. Positron coincidence detection and positron imaging using gamma camera and high energy collimators. Production and characteristics of positron emitters. Diagnostic testing using PET and Integrated PET/CT. Radiopharmaceuticals for PET imaging. Patient preparation, procedures and processing in PET studies. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC282   2 Credits   6 Periods
PET Practicum
Comprehensive, high level practical experience at a Positron Emission Tomography (PET) clinical site. Cooperative work with
direct and indirect supervisory personnel in a PET setting. Emphasis on technical components of PET and Positron Emission
Tomography/Computed Tomography (PET/CT) procedures and patient care, radiopharmacy and radiation safety specific to PET
and PET/CT. Prerequisites: Admission to Nuclear Medicine Technology program.

NUC290   3 Credits   3 Periods
Nuclear Medicine Certification Preparation Seminar
Presentations by field authorities on selected topics related to professional job seeking procedures and development of a resume. Review of content areas addressed on the American Registry of Radiologic Technologists (ARRT), Nuclear Medicine Technology Certification Board (NMTCB), and Arizona State Licensure examinations. Study and test taking strategies. Prerequisites: Admission to Nuclear Medicine Technology program.

NURSING (NUR)

NUR151   10 Credits   20 Periods
Nursing Theory and Science I
Introduction to fundamentals of nursing theory and practice utilizing critical thinking based on the nursing process and principles of evidence based practice. Focus on meeting basic human needs within the wellness/illness continuum. Theoretical concepts related to holistic care of well, geriatric, and adult clients. Provides safe nursing care to clients with selected alterations in health. Introduction to professional nursing practice. Applies concepts of health promotion, disease/illness prevention. Provides care based upon integration of pathophysiology, nutrition, communication and physical, biological, and psycho-social sciences. Uses information technology in performing and evaluating client care. Prerequisites: Admission into the Nursing Program.

NUR158   6 Credits   10 Periods
Nurse Assisting
Introduction to the role of the nursing assistant for clients across the wellness/illness continuum within the nurse assisting scope of practice. Includes basic problem solving processes specific to meeting the basic and holistic needs of clients, therapeutic communication skills essential for the nursing assistant, interventions to ensure the needs and safety of the client, specific types of diseases, conditions and alterations in

behavior of the client, and principles of nutrition and fluid balance. Focus is on special needs of the elder client in the acute and long-term care settings, and basic emergency care skills and procedures. Provides opportunity for the development of clinical competency in the performance of selected nurse assisting skills and procedures through participation in the care of clients. Prerequisites: Completed Health and Safety Documentation Form (proof of immunity or immunizations for Rubella, Rubeola, Mumps, Varicella, Hepatitis B, Td, current TB testing, current Health Care Provider CPR card and current Fingerprint Clearance Card) and completed Health Care Provider Signature form.

NUR160PN   11 Credits   21 Periods
Practical Nursing Theory and Science I
Core values of the practical nursing program, nursing history, standards, and scope of practice of the practical nurse. Safe nursing care of clients with selected alterations in health; fundamental concepts of health promotion, disease/illness prevention. Nursing care based upon integration of pathophysiology, nutrition, communication and physical, biological, and psycho-social sciences. Uses information technology in performing and documenting client care. Prerequisites: Admission into the Fast Track Practical Nursing Program.

NUR171   8 Credits   16 Periods
Nursing Theory and Science II
Application of nursing theory and practice utilizing critical thinking based on the nursing process and evidence based practice. Holistic nursing concepts of health promotion, disease/illness prevention, and health restoration for adult and geriatric clients. Role development as the professional nurse member of the health care team. Participation in client teaching and discharge planning. Application of previous knowledge of physical, biologic, psycho-social sciences, and the cultural and spiritual aspects of nursing care. Application of nursing concepts in the development of plan of care to include pathophysiology, nutrition, pharmacology, and skills in communication. Uses information technology in planning, documenting, and evaluating client care. Prerequisites: NUR151 or permission of Nursing Department Chairperson.

NUR180PN   11 Credits   21 Periods
Practical Nursing Theory and Science II
Holistic practical nursing concepts and theories related to care of childbearing, pediatric, adult, and geriatric clients. Role of the practical nurse collaborating with other members of the healthcare team. Concepts of health promotion and disease/illness prevention. Nursing care based upon integration of pathophysiology, nutrition, communication and physical, biological and psycho -social sciences. Information technology in performing and documenting client care. Emphasis on nursing care related to pediatric, child-bearing families, and adult clients with selected alterations in health; concepts of delegation, prioritization and management of care for the practical nurse based on the core values of the nursing program. Prerequisites: NUR160PN.

NUR187   1.5 Credits   1.5 Periods
Pharmacology and Medication Administration II
Overview of selected drug classifications and categories. Emphasis on principles of drug metabolism and effects, interactions and adverse reactions, and nursing implications for safe practice. Requires application of previous knowledge of physical, biological, and social sciences. Prerequisites: Permission of Nursing Department/Division Chair.

NUR191   3 Credits   5 Periods
Practical Nursing Transition
Overview of the role of the practical nurse in care of clients. Includes nursing standards and scope of practice of the practical nurse. Emphasis on nursing care related to pediatric and care of the well childbearing client and childbearing family. Focus on the role of practical nurse in providing care through interventions consistent with established nursing care plans. Prerequisites: NUR171 or permission of Nursing Department Chair.

NUR251   8 Credits   16 Periods
Nursing Theory and Science III
Application of critical thinking strategies related to holistic care of the newborn, pediatric, and childbearing clients. Integration of concepts related to holistic care of adults and geriatric clients with selected acute and chronic alterations in health. Integration of professional nursing standards in role development. Utilization of previous knowledge of physical, biologic, psycho-social sciences, and the cultural, spiritual aspects of nursing care. Integration of concepts of nutrition, pharmacology, communication, health promotion, and pathophysiology into nursing care. Prerequisites: (BIO202, BIO205, and NUR171) or permission of Nursing Department Chairperson.

NUR271   7 Credits   13 Periods
Nursing Theory and Science IV
Integration of critical thinking strategies for complex holistic needs of high-risk clients with multi- system health alterations. Application of strategies related to holistic care of the client with psychiatric/ mental health disorders. Introduction to community based care. Assimilation of professional role into practice. Evaluation of care based on the knowledge of physical, biologic, psycho-social sciences, and the cultural and spiritual beliefs of clients. Development of nurse leadership and management roles. Integration of concepts of nutrition, pharmacology, communication, health promotion, and pathophysiology into nursing care. Prerequisites: NUR251 or permission of Nursing Department Chairperson.

NUR291   2 Credits   6 Periods
Nursing Clinical Capstone
Synthesis of the nursing process to facilitate role transition from student to graduate nurse within a preceptorship experience. Development of nurse leadership and management roles. Prerequisites: NUR271 or permission of Nursing Department Chairperson.

NURSING: CONTINUING EDUCATION (NCE)

NCE101   2 Credits   2 Periods
Introduction and Overview of Cancer Disease
Introduction and overview of the disease and treatment of cancer including cancer origin, development, pathology, staging, hematopoiesis, epidemiology, diagnosis modalities, treatment options, cancer research and differentiation of solid tumors versus nonsolid tumors. Effective analysis, synthesis, and evaluation of topics through written discourse. Prerequisites: Health care professional, or permission of department or division.

NCE118   0.5 Credit   0.5 Period
Ventilator Management for Nurses
Nursing care and management of the mechanically ventilated patient. Adjuncts to airway management including types and indications for use. Initiation, management and weaning of mechanical ventilation. Prerequisites: Registered Nurse or Licensed Practical Nurse or respiratory therapist.

NCE128   0.5 Credit   0.5 Period
Observational Skills for Nursing Assist
Physical and nutritional observations of the adult client. Cultural considerations in health observations. Acute interventions in emergency situations. Prerequisites: Current Nurses Assistant certification or Patient Care Technician.

NCE165   1 Credit   1 Period
Legal Aspects of Nursing
Principles of legal aspects in nursing, rules of liability, negligent conduct and principles of malpractice. Review of the scope of nursing practices, and other legal matters. Prerequisites: None.

NCE168   1 Credit   1 Period
End of Life Care Training
Nursing care at the end of life, pain management, symptom management, ethical issues, communication, cultural considerations, loss, grief and bereavement. Achievement of quality palliative care and preparation for and care at the time of death. Prerequisites: None.

NCE170   3 Credits   3 Periods
Pharmacology for Nurses
Review and update of selected pharmacological classifications. Includes dosages, administration methods and reactions. Prerequisites: (Current license as Practical Nurse or Registered Nurse) or registered as student nurse or permission of instructor.

NCE173   1 Credit   2 Periods
LPN-Venipuncture
Development of clinical skills for venipuncture. Emphasis on review of anatomy and physiology of vasculature of the arm, medical asepsis, nursing process and procedure. Prerequisites: Current practical nurse license in Arizona; or permission of instructor.

NCE175   10 Credits   18 Periods
Licensed Practical Nurse Update
Role and responsibilities of the Licensed Practical Nurse (LPN). Application of nursing care for medical-surgical patients, use of the nursing process and administration of medications. Includes expanded role of the Licensed Practical Nurse, principles of safe nursing practice, legal/ethical issues, human growth and development, therapeutic communication and physical assessment skills. For Licensed Practical Nurses returning to active nursing in the acute care setting. Prerequisites: Current license as Practical Nurse.

NCE201   3 Credits   3 Periods
Physical Assessment
Basic health assessment by collecting health histories and performing physical examinations. Relationship of sciences and humanities to holistic aspects of health. Assessment for normal, variations of normal, and deviations from normal findings. Prerequisites: Current Practical Nurse (PN) or Registered Nurse (RN) license or permission of instructor.

NCE203   0.5 Credit   0.5 Period
Interpretation of Laboratory Diagnostic Examinations
Utilization of laboratory diagnostic examination results for evaluation of patient conditions. Normal results for selected body fluids. Abnormal results related to pathophysiological conditions of adults. Incorporation of results of examinations to assess, modify, and evaluate therapy for patients with specific conditions. Prerequisites: Registered Nurse or Licensed Practical Nurse, Nursing students, or permission of instructor.

NCE204   1 Credit   1 Period
Hemodynamics
Events of the cardiac cycle related to normal hemodynamic waveforms and pressures. Purpose, procedure and potential complications related to hemodynamic invasive lines. Trouble shooting and preventative procedures for hemodynamic invasive lines. Normal and abnormal pressure forms related to various forms of pathophysiology. Treatments and interventions for specific cardiac diseases. Impact of paced rhythms, and intraaortic balloon pumps on normal hemodynamic waveforms. Safe removal procedure for hemodynamic devices. Prerequisites: Registered nurse (RN), respiratory therapist, or cardiovascular technician with knowledge of dysrhythmia recognition.

NCE205   4 Credits   4 Periods
Emergency Room Nursing
Roles of emergency health team. Medical/legal issues specific to emergency room care. Triage classifications for specific emergency room/ department situations, nursing care for selected conditions, trauma, and disease processes. Organ donation issues, discharge procedures and client education. Prerequisites: Registered Nurse (RN), or Licensed Practical Nurse (LPN), or currently enrolled in a nursing program, or permission of instructor.

NCE208   3 Credits   3 Periods
Neonatal Pathophysiology
Pathophysiology and physiologic adaptations of the neonate to include assessment and management of respiratory, cardiac, hematological, immunological, neurological and fluid and electrolyte disorders. Acid-base regulation and hemodynamic dysfunction. Prerequisites: Registered therapist, registered nurse (RN) or pharmacist with neonatal experience.

NCE209   3 Credits   3 Periods
School Health Assisting
The role of the school health assistant. Legal issues related to the school health setting. Performance of vision, hearing, and scoliosis screenings. Documentation, vital signs and triage guidelines in the school health setting. Common diseases that affect school-age children. Child abuse issues and protocol. Common medications and their side effects. Documentation and procedures related to drug administration. Prerequisites: None.

NCE210   1 Credit   1 Period
School Nurse Emergency Assessment Skills
Update of emergency assessment in the school setting. Includes emergency assessment of seizures, asthma, head and neck injuries, heat-related problems, bites, stings, burns, and orthopedic injuries. Prerequisites: School nurse, school health aide, other health professionals or permission of the instructor.

NCE212   0.5 Credit   0.5 Period
Patient Education
Patient education instructional methods, educational theories, nursing process and case management in patient education. Development of patient education tools. Prerequisites: Registered Nurse (RN) or Licensed Practical Nurse (LPN) or permission of instructor.

NCE213ND   0.5 Credit   0.5 Period
Long-Term Care Nursing Update
Medicare and insurance documentation procedures for the long-term care patient. Medical-legal issues that pertain to the long-term care patient. Specific nursing procedures performed for the long-term care patient. Prerequisites: Registered Nurse (RN), Licensed Practical Nurse (LPN), or health worker currently employed in a long-term care setting.

NCE214CA   1 Credit   1 Period
Interpretation of Cardiac Arrhythmias
Focuses on common cardiac arrhythmias. Includes abnormalities in regard to the major and minor effects on a patient's health, specific drug therapy and nursing implications. Prerequisites: Permission of instructor.

NCE214ME   1 Credit   1 Period
Advanced Metrology and IV Drug Therapy
Advanced course in intravenous and pediatric calculations. Preparation for NCLEX-RN exam and Registered Nurse review of complex medication calculations. Emphasis on safe clinical practice using the nursing process to analyze and calculate pediatric fractional doses and critical care medications. Prerequisites: Registered Nurse or current student in Associate in Applied Science degree Nursing program.

NCE214MM   1 Credit   1 Period
Math/Methods of Drug Calculation
Focuses on basic mathematical concepts using decimals and fractions to calculate fractional and metric-apothecary conversion dosage problems and intravenous flow rates. Emphasis on the dimensional analysis problem solving method. Prerequisites: None.

NCE214ND   1 Credit   1 Period
Nursing Developmental Skills for Health Providers
Updating specific nursing areas in order to enhance success in nursing courses and/or employment. May be repeated for a total of ten (10) credits. Prerequisites: Previous coursework or experience in nursing related skills or permission of instructor.

NCE214OP   1 Credit   1 Period
Orientation to Nursing Program
Overview of the philosophy, core values, policies, competencies and curricular components of the Maricopa Community College District Nursing Program. Basic concepts of therapeutic communication, normal growth and development, the nursing process, pharmacology, metrology, and concepts of intravenous therapy. Emphasis on the use of the nursing process, utilization of critical thinking skills, sound decision-making principles in the clinical setting, the communication process, time management and stress reduction, and the transition in role expectations between Licensed Practical Nurse (LPN) and Registered Nurse (RN). Review and evaluation of Practical Nursing skills included. Prerequisites: Advanced placement into the Nursing program.

NCE214PN   1 Credit   1 Period
Practical Nurse NCLEX Review
Review of typical test items for the Practical Nurse NCLEX examination. Includes practice tests, study strategies, mnemonic devices, and test anxiety reduction techniques. Prerequisites: Licensed Practical Nurse, or Board eligible, or permission of instructor.

NCE215AB   0.5 Credit   0.5 Period
Nursing Update: Wound and Skin Care
Wound and skin assessment and documentation guidelines. Skin care protocols and interventions to prevent pressure ulcers and promote optimal healing. Wound care products and treatment options. Prerequisites: Registered Nurse, or Licensed Practical Nurse, or currently enrolled in a nursing program, or permission of instructor. May be repeated for a total of five (5) credit hours.

NCE215AC   0.5 Credit   0.5 Period
Nursing Update: Stoma Care
Care of the patient with fecal and urinary diversions. Appliance selection, stoma care, and management of potential complications. Includes nutritional, psychological, and educational aspects of care. Prerequisites: Registered Nurse, or Licensed Practical Nurse, or currently enrolled in a nursing program, or permission of instructor.

NCE215AD   0.5 Credit   0.5 Period
Nursing Update: Advances in Diabetes Management
Diabetes management and implications. Risk factors of diabetes and lifestyle modifications. Medication updates and new technological advances for the treatment of Type I and Type II diabetes. Prerequisites: None.

NCE215AE   0.5 Credit   0.5 Period
Nursing Update: Cardiac Care
Provides nurses with up-to-date information on prevention, diagnosis, and treatment of cardiovascular and related diseases. Prerequisites: Registered Nurse (RN), or Licensed Practical Nurse (LPN), or other licensed personnel working with cardiac patients. May be repeated for a total of ten (10) credit hours.

NCE215ND   0.5 Credit   0.5 Period
Nursing Skills Update
Enhancement and reinforcement of specific nursing skills. Special needs patients, patient assessment techniques, medicolegal responsibilities, and diagnostic procedures. May be repeated for a total of ten (10) credits. Prerequisites: None.

NCE216AA   0.5 Credit   0.5 Period
School Health Update: Assessment Skills
Assessment skills for the school health setting. Assessment and management of selected school health problems including abdominal pain, head and spinal cord injuries, and environmental hazards. Prerequisites: Registered Nurse, or Licensed Practical Nurse, or currently enrolled in a nursing program, or permission of instructor.

NCE216ND   0.5 Credit   0.5 Period
School Nurse Skills Update
Enhancement and reinforcement of specific skills encountered in the school health setting. Special needs of physically and emotional disabled children. Review of special procedures and medications used with special children populations. Prerequisites: Current school nurse or school health aide. May be repeated for a total of ten (10) credits.

NCE219   0.5 Credit   0.5 Period
Advanced First Aid for School Health Staff
Advanced first aid principles and interventions for staff working in a school health setting. Topics include assessment and management of medical emergencies such as asthma, anaphylaxis, environmental emergencies, seizures and playground trauma. Prerequisites: (Basic first aid training or experience) or permission of instructor.

NCE220   0.5 Credit   0.5 Period
Advanced IV Therapy Skills for RNs
Intravenous (IV) therapy skills utilized by the Registered Nurse in home health, long term care, and the acute care setting. Includes principles of care for specific central venous catheters, and infusion pumps. Also, legal implications of advanced IV practice. Prerequisites: Current license as Registered Nurse or enrolled in an accredited RN program or permission of instructor.

NCE221   3 Credits   4 Periods
Patient Care Technician Skills
Patient care technician skills and techniques which include: drawing blood, performing a variety of specimen collections, observing and reporting patient status, assisting in patient preparation and electrode placement for electrocardiograms, suctioning patients, performing urinary catheterizations, documentation and reporting of skill completion, maintaining patient confidentiality, and recognizing legal and ethical commitments related to patient care technician skills. Prerequisites: Certified Nurse Assistant (CNA), Nurse Assistant course or equivalent within the past year, and permission of Continuing Education Program Director and/or Instructor.

NCE223   3 Credits   4 Periods
LPN-IV Therapy and Medication Skills
Terminology and anatomy related to intravenous therapy. Drug response factors, dosage, calculations, intravenous site dressing change, intravenous administration equipment, and initiating intravenous therapy. Documentation and procedures for laboratory check lists. Meets state nursing board requirements for initiating intravenous therapy and administrating intravenous medications. Prerequisites: Current license as Practical Nurse or permission of instructor.

NCE224   3 Credits   3 Periods
Nursing Case Management
Case management and managed care responsibilities, insurance strategies, utilization management, legal and ethical issues, quality improvement and discharge planning. Prerequisites: Registered Nurse (RN), Licensed Practical Nurse (LPN), social worker, or permission of instructor.

NCE230   0.5 Credit   0.5 Period
PICC Line Insertion
Overview of the care, maintenance and insertion of Peripherally Inserted Central Catheter (PICC) lines. Advantages of PICC lines, legal implications, types, as well as anatomy and physiology for proper insertion. Prerequisites: Current license as a Registered Nurse.

NCE231   1 Credit   1 Period
Pharmacology for Critical Care and Emergency Room Nurses
Pharmacology update for emergency department and critical care personnel on new drug therapies and related patient care protocols.

Pharmacological management of cardiac and respiratory system disorders, complications, and emergency interventions. Patient management protocols for conscious sedation. New pharmacological agents for the treatment and management of diabetes and other endocrine disorders. Prerequisites: Registered Nurse or permission of instructor.

NCE232   3 Credits   3 Periods
Health Assessment of the School Age Child
Comprehensive health assessment foundation. Development of interviewing skills, obtaining health histories, and conducting physical examinations on the school age child. Identification and management of minor illnesses and health problems common to school age children. Prerequisites: School nurse or current Registered Nurse (RN) licensure.

NCE233   3 Credits   3 Periods
Nursing Care of the Special Needs Child
Overview of congenital and acquired pediatric conditions, chronic illnesses and physical challenges that may lead to developmental delay or educational dysfunction. Application of the nursing process to provide care for the special needs child. Developmental assessment tools, skilled nursing interventions and environmental factors. Resources for disabled and chronically ill children through family, educational system and the community. Prerequisites: School nurse or current registered nurse (RN) licensure.

NCE234   3 Credits   3 Periods
Fundamentals of School Nursing Practice
Assessment, development, implementation and evaluation of school health programming. Focus on nursing theory as it relates to school health programming. Program management, professional development, dealing with change, health education, interdisciplinary interaction and the role of the professional nurse in the school setting. Prerequisites: School nurse or current registered nurse (RN) licensure.

NCE235   0.5 Credit   0.5 Period
Conscious Sedation
Conscious sedation criteria and protocols. Nursing responsibilities and interventions pre-, intra- and post-procedure. Medications commonly used for conscious sedation, monitoring equipment, potential complications and required documentation. Prerequisites: Registered nurse (RN) or permission of instructor.

NCE236   1 Credit   1 Period
Health Care Management for School Nurses
Introduction to management concepts, organizational theory, and leadership, and their application to the development of the nurse's role as manager in the health office. Explores managerial principles of planning, organizing, staffing, leading and controlling in the context of both individual and group behavior as experienced in health care systems. Prerequisites: Registered Nurse (RN) currently working in a school health office setting.

NCE237   0.5 Credit   0.5 Period
Care and Management of Vascular Access Devices
Types of vascular catheters, types of clients who use them and clinical indications for each. Care for the different devices, differences in tip locations and the types of infusion therapies infused through each device. Prerequisites: Current Arizona Registered Nurse (RN) license or Licensed Practical Nurse (LPN) license or registered as student nurse or permission of Instructor.

NCE238   1 Credit   1 Period
Managing Athletic Injuries in the School Setting
Injury prevention, treatment of minor disorders and injuries. Specific types of musculoskeletal sprains and strains. Serious and sports-related injuries. Drug therapy and abuse. Managing athletes with chronic health problems. Prerequisites: Current school nurse, school health aide, coaches, other health professionals, or permission of instructor.

NCE239   2 Credits   2 Periods
Introduction to Nursing Informatics
Nursing support by information systems in delivery, documentation, administration and evaluation of patient care and prevention of diseases. Utilization of computer technology for communication, documentation, staff education, discharge planning, professional development, networking and health team collaboration. Prerequisites: None.

NCE240   3 Credits   3 Periods
Community Health Nursing Principles for School Nurses
Utilization of nursing and family theories in community health practice to promote self care of individual and families based on community health nursing standards. Includes methods utilized to assess and identify populations at risk, use of community resources as well as prevention and health promotion models. Prerequisites: None.

NCE242   0.5 Credit   0.5 Period
Twelve (12) Lead Electrocardiogram (EKG) Interpretation
Normal and abnormal wave forms of the cardiac cycle. Normal and abnormal heart axis. Differences between ventricular and supraventricular tachycardia. Various types of blocks. Identification of heart chamber enlargement. Injury, ischemic and necrotic heart patterns. Effect of specific drugs and electrolyte disorders on electrocardiograms (EKG). Prerequisites: Basic electrocardiogram (EKG) experience or previous course work in dysrhythmia interpretation or permission of instructor.

NCE243   3 Credits   4 Periods
Nursing Skill and Competency Review
Resume writing, interpersonal and therapeutic communication, teamwork concepts, IV Skills and pharmacological review. Central line catheter care, nutritional management, urinary catheterization, NG insertion and suctioning, respiratory management, basic wound care, and patient assessment skills. Prerequisites: Permission of instructor.

NCE249   4 Credits   4 Periods
Basic Critical Care Nursing
Foundation in basic critical care for nurses who are new or interested in entering the critical care environment. Including anatomy, physiology, and pharmacology. Disease management for the following systems: cardiac, respiratory, neuroscience, gastrointestinal, renal, endocrine and hematology, hemodynamics and ventilator management. Prerequisites: Current license as Registered Nurse or Practical Nurse, or recent graduate of an accredited nursing program or permission of instructor.

NCE251   3 Credits   3 Periods
Telemetry Nursing
Cardiac anatomy and physiology and the conduction system. Elements of a cardiac assessment. Recognition of arrthymia and cardiac abnormalities seen on electrocardiogram (EKG). Indications for temporary and permanent pacing. Drug groups and their interactions specific to the cardiac patient. Normal and abnormal lab values for the

cardiac patient. Pre- and post-procedure care for cardiac procedures. Nursing interventions and emergency treatment. Prerequisites: Registered Nurse (RN) and NCE248, or NCE214CA, or equivalent.

NCE255   **2 Credits**   **2 Periods**
Death, Grief, and Bereavement
Grief and bereavement care for the client and family. Ethical and cultural issues in terminal care, children and death, AIDS related death issues, suicide, homicide and survivor interventions. Prerequisites: None.

NCE259   **4 Credits**   **4 Periods**
Advanced Critical Care Nursing
Provides the experienced Critical Care Nurse with an opportunity to build on basic critical care knowledge. Advanced concepts in assessment, hemodynamic monitoring, pathophysiology of disease processes, and use of the Nursing Process for critically ill patients with complex, multisystem disorders. Designed to help prepare experienced Critical Care Nurses for the certification examination for Critical Care Nursing offered by the American Association of Critical Care Nurses. Prerequisites: NCE249, or Registered Nurse working in Critical Care, or permission of instructor.

NCE260   **0.5 Credit**   **0.5 Period**
Intra-Aortic Balloon Pump
Mechanics of the cardiac cycle. Physiologic effects of the intra-aortic balloon pump. Indications and contraindications. Components, operation, care and maintenance of the intra- aortic balloon pump. Complications and nursing implications with the use of the intra-aortic balloon pump. Prerequisites: Registered Nurse (RN) or cardiovascular technician who has completed a Basic EKG course and has Critical Care Training.

NCE261   **0.5 Credit**   **0.5 Period**
Ultrasound-Guided Peripheral Intravenous Access
Technique of ultrasound-guided peripheral venous access. Client selection for procedure, selection of vasculature, and troubleshooting using ultrasound guidance equipment. Use of equipment and hands-on, simulated practice of catheter placement. Prerequisites: Current Arizona Registered Nurse (RN) license or Licensed Practical Nurse (LPN) license or registered as student nurse or permission of Instructor.

NCE262   **3 Credits**   **3 Periods**
Legal Medical Consulting
Role of the legal medical consultant in specific litigation. Importance of the law library. Definition of ethics, professionalism, standards of practice, discovery and disclosure. Steps and procedures involved with legal research. Role of the legal medical expert as a witness. Alternative conflict resolution. Role of independent medical examination. Role of the insurance industry and risk management in legal medical issues. Prerequisites: Licensed or certified medical personnel or permission of instructor.

NCE264   **3 Credits**   **3 Periods**
Advanced Legal Medical Consulting/Civil Procedure
Reinforcement and broadening of knowledge and skills required for a career in legal medical consulting. Civil litigation process from initial client contact, discovery, and trial to post trial period. Intensive case analysis and thorough exploration of legal theory, procedure, and strategy. Discussion of the Federal and Arizona Rules of Civil Procedure

and hands on experience in the preparation of legal documents and the trial notebook. Prerequisites: NCE262 or equivalent.

NCE275   **10 Credits**   **18 Periods**
Registered Nurse Update
Update of current general principles of nursing care, procedures and medication. Prerequisites: Current Registered Nurse license.

NCE276   **1 Credit**   **1 Period**
Clinical Teaching in Nursing: An Overview
Overview of the process, concepts and skills related to supervising nursing students in the clinical arena. Examines concepts of clinical teaching, provides comprehensive framework for planning, guiding, and evaluating learning activities for nursing students in the clinical arena. Prerequisites: Current Registered Nurse License.

NCE280   **3 Credits**   **3 Periods**
Neurological Nursing
Roles and responsibilities of health care professionals for examinations, nursing diagnoses, and care plans for patients with degenerative, neurological dysfunctions. Includes major structures of neuroanatomy and psychosocial issues of mental illness. Prerequisites: Current license as Registered Nurse (RN) or Licensed Practical Nurse (LPN).

NCE281   **3 Credits**   **3 Periods**
Advanced Concepts of Neurological Nursing
Analysis and identification of pathophysiology for acute neurological and neurosurgical nursing. Focus on Intensive Care Units (ICU) and stepdown unit care. Review of pharmacological agents used in head injury and stroke patients. Nursing interventions for the patient with subdural hematoma, closed head injury, arteriovenous malformation, and the comatose patient. Prerequisites: NCE280 or permission of the instructor.

NCE295   **3 Credits**   **3 Periods**
Psychopharmacology for Nurses
Introduction of the pharmacology of psychotropic drugs, pharmokinetics and pharmacodynamics, mechanism of action, and principles of use and current status. Prerequisites: NCE170 or current license as practical nurse (PN) or registered nurse (RN).

OCCUPATIONAL SAFETY AND HEALTH (OSH)

OSH101   **3 Credits**   **3 Periods**
Introduction to Occupational Safety, Health, and Environmental Technology
Overview of occupational safety, health, and environmental regulations and technology. Overview of the regulatory framework related to safety and environmental program management. Career opportunities and the relationship to business management. Prerequisites: None.

OSH102   **3 Credits**   **3 Periods**
Introduction to Industrial Hygiene
Fundamental concepts of industrial hygiene, including terminology, basic toxicology, body entry routes, threshold limit values, and measurement. Control of typical occupational physical and chemical hazards, radiation and environmental concerns. Instruction and practice in basic sampling techniques. Prerequisites: None.

OSH103   **0.5 Credit**   **0.5 Period**
General Industry Workplace Safety
Hazard recognition, reduction and accident prevention in workplace environments. Basic overview of Occupational Safety and Health Administration (OSHA) agency safety laws and record keeping requirements. Chemical and materials handling, ergonomic priorities, electrical safety, machine safety, safety requirements, planning and response to natural/man-made emergencies. Personal protective equipment, safety labels/signage, confined spaces, walking/working surfaces, management and employee responsibilities. Prerequisites: None.

OSH105   **2 Credits**   **2 Periods**
Construction Safety
Occupational Safety and Health Act. Common causes for accidents and fatalities in construction. Abatement techniques for construction specific hazards. Use of personal protection and lifesaving equipment. Specific types of health hazards related to the construction industry. Proper methods for handling hazardous materials. Prerequisites: None.

OSH106   **2 Credits**   **2 Periods**
Industrial Safety
Safety, health management and accident prevention in industrial work environment. Role of OSHA act, materials handling, electrical safety, machine safety, first response to fire and medical emergencies, safety signs and color codes, recognition of safety and health hazards, accident prevention, and management's responsibilities. Prerequisites: None.

OSH107   **3 Credits**   **3 Periods**
Occupational Safety Principles and Practice
Application of safety and health regulations and best practices. Hazard identification and accident investigation techniques. Major construction hazards and controls. Application of fire protection standards. Prerequisites: GTC/FAC/OSH/MIT106.

OSH108   **0.5 Credit**   **0.5 Period**
Safe Forklift Operations
Safe and proper operation of a forklift. Parts and function of a forklift, principles of operation, and safety precautions. Inspection procedures and safety standards. Hands-on operation of a forklift. Prerequisites: None.

OSH110   **2 Credits**   **2 Periods**
OSH Standards for Construction (OSX910)
Occupational Safety and Health Administration (OSHA) standards for construction and role of Occupational Safety and Health Administration Act. General Duty Clause and major sections of 1903, 1904, and 1926. Identification of violations and description of appropriate abatement procedures for safety and health hazards. Prerequisites: None.

OSH111   **2 Credits**   **2 Periods**
OSH Standards for General Industry (OSX911)
Occupational Safety and Health Administration (OSHA) standards for general industry and the role of Occupational Safety and Health Administration act. General Duty Clause and major sections of 1903, 1904, and 1910. Identifications of violations and description of appropriate abatement procedures for safety and health hazards. Prerequisites: None.

OSH112AA   **1 Credit**   **1 Period**
Workplace Hazard Analysis: OSHA Accident Reduction
Transitioning from Occupational Safety and Health Administration's (OSHA) former "Accident Investigation" protocol into a pro-active incident investigation program. Basic accident investigation procedures and accident analysis techniques. Basic skills for conducting an effective accident investigation at occupational workplaces. Prerequisites: None.

OSH113   **1 Credit**   **1 Period**
Urban Workplace Response: First Aid/Cardiopulmonary Resuscitation
Workplace employee injury/illness response when medical help is less than 15 minutes away. Cardiopulmonary Resuscitation and first aid for the adult, child and infant patients includes Automated External Defibrillator (AED), rescue breathing, obstructed airway, and other first aid procedures. Designed to train employee responders in basic lifesaving skills and procedures required during emergency situation. Application of verbal first aid solutions. Selection and use of appropriate first aid kits. Follow up with appropriate regulatory/insurance documentation. Prerequisites: None.

OSH118   **1 Credit**   **1 Period**
OSHA Standards and Regulations
Provisions of and implementation of OSHA (Occupational Safety and Health Administration) Act in the work place. Rights and responsibilities under the OSHA Act. Appeals process, record keeping, and voluntary protection programs. OSHA's construction and general industry standards. Overview of the requirements of the more frequently referenced standards. Prerequisites: None.

OSH201   **2 Credits**   **2 Periods**
Fall Arrest Systems
Evaluation and application of state-of- the art technology for fall protection. Analysis of fall protection, the components and limitations of fall arrest systems and relevant Occupational Safety and Health Administration (OSHA) standards and other requirements. Prerequisites: OSH105, or GTC/FAC/OSH/MIT106, or OSH110, or OSH111.

OSH203   **3 Credits**   **3 Periods**
Safety Program Management I
Introduction to safety program theory and principles needed to develop, manage, implement and evaluate a safety and health program. Systems safety and applied psychology theories that enhance safety program management. Hazard identification methods and controls, and application of these principles to case studies. Prerequisites: GTC/FAC/OSH/MIT106 or permission of instructor.

OSH204   **3 Credits**   **3 Periods**
Health and Safety Program Management II
Current and emerging topics in safety and health program management. Exploration of current topics through emerging regulatory and/or consensus standards organizations. Case study investigation and analysis with applications to safety and health management. Introduction to new and evolving online training courses, seminars, video and documents. Adult leaning and instructional theory. Prerequisites: GTC/FAC/OSH/MIT106 and OSH107 or (GTC/FAC/OSH/MIT106 and OSH203) or permission of instructor.

OSH205   3 Credits   3 Periods
OSHA General Industry Training for Instructors (OSX951)
Application of adult learning principles and training techniques to identify, define and evaluated general industry hazards and acceptable corrective measures to teach the 10 and 30 hour training in accordance with 29CFR1910 Occupational Safety and Health Administration (OSHA) General Industry Safety standards and other industry requirements. Prerequisites: OSH110.

OSH206   3 Credits   3 Periods
Risk Management and Loss Control
Statistical and cost analysis, report writing, and injury prevention related to loss control. Prevention programs designed to minimize or eliminate property and personnel loss or injury. Prerequisites: None.

OSH207   3 Credits   3 Periods
OSHA Construction Training for Instructors (OSX950)
Application of adult learning principles and training techniques to identify, define and evaluated construction hazards and acceptable corrective measures to teach the 10 and 30 hour training in accordance with 29CFR1926 Occupational Safety and Health Administration (OSHA) Construction Safety standards and other industry requirements. Prerequisites: OSH110.

OSH210   3 Credits   3 Periods
Electrical Standards Low Voltage (OSX961)
Electrical hazards of low voltage installations and special equipment. Application of appropriate occupational safety and health standards regarding control hazards and safety and health work practices. Electrical standards include 29 CFR 1910, the Occupational Safety and Health Administration (OSHA) general industry regulations, and OSHA construction regulations from 29 CFR 1926. Prerequisites: OSH105, or GTC/FAC/OSH/MIT106, or OSH110, or OSH111.

OSH212   1 Credit   1 Period
Electrical Safety Arc Flash
Identification and control of electrical safety hazards for workers near energized electrical systems and equipment. Control methods for preventing serious disabling injuries, preventing damage to equipment, sites, and saving lives. Prerequisites: OSH107. OSH210 suggested but not required.

OSH213   2 Credits   2 Periods
Excavation, Trenching and Soil Mechanics
Evaluation and application of state-of-the-art technology protection for trenches and excavations. Analysis of soil mechanics and implement safety controls for trenches and excavations. Training requirements for a competent person required by Occupational Safety and Health Administration (OSHA) standards and other requirements. Prerequisites: OSH105, or GTC/FAC/OSH/MIT106, or OSH110, or OSH111.

OSH214   3 Credits   3 Periods
Machine Guarding
Evaluation and application of state-of-the-art technology for machine guarding hazards. Analysis of machine hazards including mechanical motion, point-of-operation, and other machinery processes. Implementation of abatement options, control of hazardous energy, and relevant Occupational Safety and Health Administration (OSHA)

standards and other requirements. Prerequisites: OSH105 or GTC/FAC/OSH/MIT106.

OSH218   3 Credits   3 Periods
Ergonomics
Analysis and evaluation of ergonomics risk factors for occupational tasks. Application of theories, methods, and techniques used in work design and systems. Methodological problems in human information processing, human control functions, human-machine interface, work design and process evaluation. Prerequisites: OSH107 and BIO160, or permission of Instructor.

OSH219   3 Credits   3 Periods
Safety Management and Environmental Regulations and Systems
Environmental regulations, legal requirements, and responsibilities of safety management. Prevention and management of environmental risks and solving environmental issues. Prerequisites: HMT/OSH101 and OSH107.

OSH220   3 Credits   3 Periods
Safety and Emergency Management
Assessment of emergency management systems for occupational safety program development. Planning and implementation of the four phases of emergency management: mitigation, preparedness, response, and recovery. Analysis of all hazards preparedness and response in emergency situations resulting from natural and technological hazards. Planning and budgeting for resources and staffing. Prerequisites: OSH105 or GTC/FAC/OSH/MIT106.

OSH240   3 Credits   3 Periods
Facilities Special Systems and Codes
Fundamentals of fire alarm system operation, inspection and maintenance. Fundamentals of fire sprinkler system operation, inspection and maintenance. Principles of life safety smoke control systems, including fire damper and combination fire/smoke damper applications. Security system applications including perimeter security, interior security, CCTV and card access systems. Theory and application of communication systems, including paging systems, information system backbone architecture and telephone systems. Prerequisites: OSH105, or GTC/FAC/OSH/MIT106, or OSH110, or OSH111.

OSH275   3 Credits   3 Periods
Control of Transmissible Pathogens
Pathogens including bloodborne and airborne. Regulations, disease transmission, standard and transmission based precautions, exposure control, and exposure determination. Best practices for containment and identification and selection of engineering control devices. Prerequisites: Completion of Associate in Applied Science in Water Technologies degree or completion of Associate in Applied Science in Air Conditioning/Refrigeration/Facilities degree.

OSH290AC   3 Credits   3 Periods
Case Study and Research Project
Completion of a selected safety project in policy and procedure development or training program curriculum design in actual or simulated work setting. Combined efforts of educators and employers to accomplish an outcome related to the career objectives of the students. Prerequisites: Permission of instructor.

OFFICE AUTOMATION SYSTEMS (OAS)

OAS090 0.5 Credit 0.5 Period
Touch Keyboarding
Introduction to computer keyboarding skills for personal use. Emphasis on touch keyboarding of alphabetic and punctuation keys only. Prerequisites: None.

OAS101AA 1 Credit 1.7 Periods
Computer Typing I: Keyboard Mastery
Incorporates correct touch typing principles. Prerequisites: None.

OAS101AB 1 Credit 1.7 Periods
Computer Typing I: Letters, Tables & Reports
Letter, table, and report formatting. Prerequisites: OAS101 AA or permission of department/division.

OAS101AC 1 Credit 1.7 Periods
Computer Typing I: Production and Manuscript
Simple office projects and manuscripts. Prerequisites: OAS101AB or permission of department/division.

OAS103AA 1 Credit 1.7 Periods
Computer Typing: Skill Building I
Individual progression on speed/accuracy drills. Prerequisites: Ability to touch type at 25 words per minute or permission of department/division.

OAS103AB 1 Credit 1.7 Periods
Computer Typing: Skill Building II
Progression on speed/accuracy drills. Prerequisites: OAS103AA or permission of department/division.

OAS103AC 1 Credit 1.7 Periods
Computer Typing: Skill Building III
Progression on speed/accuracy drills. Prerequisites: OAS103AB or permission of department/division.

OAS108 3 Credits 3 Periods
Business English
Comprehensive coverage of correct use of English grammar including spelling, punctuation, capitalization, and number style mechanics in a business context. Prerequisites: None.

OAS118 1 Credit 1.7 Periods
10-Key by Touch
Touch system of numeric keys on ten-key pads. Prerequisites: None.

OAS130DK 1 Credit 2 Periods
Beginning Word
Using Word for Windows to create, edit, and print documents. Prerequisites: Ability to keyboard a minimum of 20 wpm or permission of instructor.

OAS131DK 1 Credit 1 Period
Intermediate Word
Intermediate concepts in using Word for Windows. Prerequisites: BPC130DK or permission of instructor.

OAS135DK 2 Credits 2 Periods
Word: Level I
Using Word word processing software to create and name files, edit text, format, and print a variety of documents. Prerequisites: None.

OAS181 3 Credits 3 Periods
Medical Office: Vocabulary
Basic medical vocabulary with emphasis on pronunciation, spelling, and definition. Prerequisites: None.

PAINTING/DECORATING: APPRENTICESHIP (PNT)

PNT101 4 Credits 4 Periods
Basic Painting
An orientation to the trade, apprentice responsibilities, trade mathematics, basic ladders and scaffolds. Preparation and application procedures of various types of surfaces, causes of paint failures and remedies, overview of basic materials. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PNT102 4 Credits 4 Periods
Painting and Decorating
Overview of painting and decorating with emphasis on materials, coating applications, wood finishes, and safety procedures. Causes of paint failures and remedies. Also preparation procedures of plaster drywall and masonry. Introduction to color mixing and matching. Prerequisites: PNT101.

PNT103 4 Credits 4 Periods
Color Mixing/Wood Finishing
The nature and effects of color, preparation of colors, and color matching procedures and techniques. Also includes wood finishing techniques with a study of woods and wood products. Prerequisites: PNT102.

PNT104 4 Credits 4 Periods
Special Decorative Finishes/Advanced Ladders and Scaffolding
Special decorative finishing techniques including glazing, antiquing, wood graining and marbelizing. Safe practices using ladders and scaffolding and related equipment. Rigging off-the-ground work platforms also included. Prerequisites: PNT 103.

PNT201 4 Credits 4 Periods
Basic Blueprints/Blasting/Drywall Taping
Blueprint reading and estimating. Use of blueprint lines, symbols, and scales found in the painting trade. Also includes abrasive and water blasting, drywall taping and finishing. Prerequisites: PNT104.

PNT202 4 Credits 4 Periods
Spray Painting/Coatings, Coverings
Operating and maintenance procedures for spray painting equipment and materials. Use of specialized painting systems and equipment. Application procedures for special coatings and wallcoverings. Prerequisites: PNT 201.

PERIOPERATIVE NURSING (PON)

PON210   3 Credits   3 Periods
Perioperative Principles I
Role and responsibilities of the professional nurse in the perioperative setting. Team concept, patient care, nursing process and impact of quality assurance. Role of Association of Operating Room Nurse Standards of Practice. Prerequisites: Acceptance into program or permission of department.

PON212   3 Credits   3 Periods
Perioperative Principles II
Common pathogenic organism and methods of sanitation/sterilization. Instruments, procedures intervention measures related to the operating room. State and Federal regulating agencies. Moral and ethical issues. Prerequisites: PON 210 or permission of department.

PON214   4 Credits   9.5 Periods
PeriOperative Laboratory
Practical application of perioperative nursing. Aseptic technique. Scrubbing, gowning, gloving, instrumentation, and maintenance of a sterile field. Accountability emphasized. Prerequisites: PON 212 or permission of Department or Division. Corequisites: PON218.

PON218   3 Credits   15 Periods
PeriOperative Clinical Practice I
Application of the nursing process in care of surgical patients during the perioperative period. Statements of competency established by the Association of Operating Room Nurses. Prerequisites: None. Corequisites: PON214.

PON220   3 Credits   15 Periods
PeriOperative Clinical Practice II
Application of the nursing process in care of surgical patients during the perioperative period. Statements of Competency, established by the Association of Operating Room Nurses. Prerequisites: PON 214 or permission of department.

PON221   3 Credits   15 Periods
Perioperative Specialty Area Clinical Practice
Diagnose specific health conditions based upon assessment data. Develop plan of care for advanced surgical procedures. Selection, preparation, set-up, and utilization of surgical instruments, equipment, pharmacologic agents, and supplies for surgical procedures. Application of principles of asepsis and safety. Use of communication skills when interacting with physicians, patients and family members. Demonstrate ethical and professional behavior in the work setting. Emergency procedures and protocol. Evaluation of surgical intervention. Prerequisites: Current Registered Nurse licensure or Surgical Technologist or permission of the instructor.

PON285   4 Credits   4 Periods
Registered Nurse First Assistant
Expansion of Perioperative Nurse role and responsibilities. Emphasis on the intraoperative period. Theory of tissue handling, providing tissue exposure, using instruments, suturing, and providing homeostasis. Prerequisites: Current Registered Nurse license, experience as R.N. in the operating room, current Cardiopulmonary Resuscitation (CPR) card or permission of department.

PON286   1 Credit   4 Periods
Registered Nurse First Assistant Practicum I
Application of theory in tissue exposure, using instruments, suturing and providing homeostasis under the direct supervision of a surgeon. Includes patient assessment and care, professional communication and safety in the surgical setting. Prerequisites: PON285 or permission of instructor.

PON287   1 Credit   4 Periods
Registered Nurse First Assistant Practicum II
Proficient application of theory in tissue exposure, using instruments, suturing and providing homeostasis under the direct supervision of a surgeon. Includes patient assessment and care, professional communication and safety in the surgical setting. Prerequisites: PON286 or permission of instructor.

PON290   2 Credits   4 Periods
Certified Nurse Midwife First Assistant
Expansion of the certified nurse midwife role and responsibilities. Emphasis on the intraoperative periods for cesarean sections, hysterectomies and tubal ligation. Includes tissue handling, providing tissue exposure, using instruments, suturing and providing hemostasis. Prerequisites: Current RN license and current certification as a nurse midwife and permission of the instructor.

PHILOSOPHY (PHI)

PHI101   3 Credits   3 Periods
Introduction to Philosophy
General consideration of human nature and the nature of the universe. Knowledge, perception, freedom and determinism, and the existence of God. Prerequisites: None.

PHI105   3 Credits   3 Periods
Introduction to Ethics
Major theories of conduct. Emphasis on normative ethics, theories of good and evil from Plato to the present. Prerequisites: None.

PHI213   3 Credits   3 Periods
Medical and Bio-Ethics
A philosophical consideration of moral problems that arise in relation to medicine and biology, e.g., death, patient's rights and biological experimentation. Prerequisites: None.

PHYSICAL EDUCATION (PED)

PED101BA   1 Credits   2 Periods
Baseball
Basic skills and game strategy of baseball. Class emphasis on competition and drills. Prerequisites: None.

PED101PS   1 Credits   2 Periods
Pilates
Mat-based exercise system focused on improving flexibility and strength for the total body. Teaches core control and stabilization while improving postural alignment. Prerequisites: None. PED101PS may be repeated for credit.

PED101SO　　**1 Credits**　　**2 Periods**
Soccer
Basic skills and game strategy of soccer. Class emphasis on competition and drills. Prerequisites: None.

PED101YK　　**1 Credits**　　**2 Periods**
Kundalini Yoga
Energetically guided Yoga focusing on psycho-spiritual growth with special consideration of the spine and endocrine system. Prerequisites: None. PED101YK may be repeated for credit.

PED101YO　　**1 Credits**　　**2 Periods**
Yoga
Promotion of overall health by strengthening muscles and stimulating glands and organs. Basic postures, breathing and relaxation techniques. Prerequisites: None. PED101YO may be repeated for credit.

PED101ZU　　**1 Credits**　　**2 Periods**
Zumba Fitness
Zumba® dynamic fitness program. Fuses hypnotic Latin rhythms and easy to follow moves. Interval training sessions where fast and slow rhythms and resistance training are combined to tone and sculpt while burning fat. Prerequisites: None. PED101ZU may be repeated for credit. The PED101ZU Zumba course does not qualify students to teach Zumba dance fitness.

PED102BA　　**1 Credits**　　**2 Periods**
Baseball - Intermediate
To improve upon basic skills and game strategy of baseball at the intermediate level. Class emphasis on competition and drills. Prerequisites: None. Prior experience recommended.

PED102SO　　**1 Credits**　　**2 Periods**
Soccer - Intermediate
To improve upon basic skills and game strategy of soccer at the intermediate level. Class emphasis on competition and drills. Prerequisites: None. Prior experience recommended.

PED115　　**2 Credits**　　**4 Periods**
Lifetime Fitness
Fitness activity and wellness study to help develop a lifetime of regular exercise, stress management, and proper nutrition. Workout includes warm-up/stretch, aerobic exercise, selected strength exercises, and cool down/stretch. May be repeated for credit. Prerequisites: None.

PED201BA　　**1 Credits**　　**2 Periods**
Baseball - Advanced
To improve upon intermediate skills and game strategy of baseball at the advanced level. Class emphasis on competition and drills. Prerequisites: None. Prior experience at competitive level recommended.

PED201SO　　**1 Credits**　　**2 Periods**
Soccer - Advanced
To improve upon intermediate skills and game strategy of soccer at the advanced level. Class emphasis on competition and drills. Prerequisites: None. Prior experience at competitive level recommended.

PHYSICAL GEOGRAPHY (GPH)

GPH111　　**4 Credits**　　**6 Periods**
Introduction to Physical Geography
Spatial and functional relationships among climates, landforms, soils, water, and plants. Prerequisites: None.

GPH212　　**3 Credits**　　**3 Periods**
Introduction to Meteorology I
Atmospheric processes and elements. General and local circulation, heat exchange and atmospheric moisture. Prerequisites: None.

GPH214　　**1 Credit**　　**3 Periods**
Introduction to Meteorology Laboratory I
Basic meteorological and climatological measurements. Prerequisites: None. Corequisites: GPH212.

PHYSICAL THERAPIST ASSISTING (PTA)

PTA101　　**1.5 Credits**　　**1.5 Periods**
Survey of Physical Therapy
History of physical therapy. Purpose, benefits, and goals of the Arizona and American Physical Therapy Associations (APTA). Roles and responsibilities of physical therapists (PT) and physical therapist assistants (PTA). Patient care, legal issues, principles of physical therapy treatment, education requirements, and functions of the American Physical Therapy Association. Prerequisites: Admission to the Physical Therapist Assisting Program, or permission of Department or Division.

PTA102　　**1 Credit**　　**1 Period**
Structured Physical Therapist Assisting Review
Structured physical therapist assisting tutorial assistance and physical therapist assisting study skills related to physical therapist assisting courses. Physical therapist assisting process and critical thinking application skills emphasized. Prerequisites: None. Corequisites: Enrollment in the Physical Therapist Assisting program or permission of department chair. Course offered as Credit (P) No credit (Z) basis. May be repeated for a total of eight (8) credit hours.

PTA103　　**3 Credits**　　**3 Periods**
Kinesiology
Physical principles of human motion. Emphasis on structure, movement, and stability of specific joints. Normal and abnormal human locomotion. Stabilizing and motion producing forces upon extremities and the spine. Kinesiological analysis of functional movement of the human body. Prerequisites: Admission to the Physical Therapist Assisting Program, or permission of Department or Division.

PTA104　　**1.5 Credits**　　**4.5 Periods**
Musculo-Skeletal Assessment Techniques
Theory and principles of goniometry and manual muscle testing. Normal range of motion of the spine and extremities. Normal posture and common postural deviations. Palpation and identification of pertinent bony and soft tissue structures. Documentation in goniometry, muscle testing, and posture assessment. Prerequisites: Admission to the Physical Therapist Assisting Program, or permission of Department or Division.

PTA200   4 Credits   8 Periods
Patient Mobility Techniques
Theory, principles and practice of proper body mechanics. Principles and techniques of gait training, patient bed mobility and transfers, wheelchair mobility. Theory, principles, and techniques of therapeutic exercise. Patient instruction, assessment techniques, assistive devices and equipment used by the physical therapy assistants and their patients. Safety and first aid in physical therapy practice settings. Documentation requirements for physical therapy interventions. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA202   5 Credits   9 Periods
Selected Physical Therapy Modalities
Stages of inflammation responses and tissue repair. Theories on pain. Guidelines for patient positioning and safety. Principles and application of thermal agents. Application and documentation of superficial heat and cold, ultrasound, electromagnetic radiation, massage, hydrotherapy, light, intermittent venous compression, and traction. Indications and contraindications for treatment methods. Research in physical therapy. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA203   3 Credits   3 Periods
Clinical Pathology
Pathologic terminology and definitions. Specific disease processes specific to physical therapy. Functional anatomy, select medical tests for diagnosis, and medication and effects on therapy. Principles of wellness and disease prevention. Prerequisites: Admission to the Physical Therapist Assisting program or permission of Department or Division.

PTA205   1.5 Credits   1.5 Periods
Communication in Physical Therapy
Communication skills in the physical therapy setting. Self-image in communication. Active listening, responding to problems, body language, patient interview skills. Communicating with chronically ill and dying patients and their families. Communicating with persons with disabilities. Cultural differences in communication and views of health care. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA206   3 Credits   15 Periods
Clinical Practicum I
Clinical experience with maximum supervision for physical therapist assisting students. Application of physical therapy skills and techniques in specific clinical settings. Interaction with patients, family members and members of the health care team. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division. Corequisite: PTA207.

PTA207   1 Credit   1 Period
Clinical Practicum Seminar I
Integration of clinical experiences from clinical practicums and didactic theory and concepts. Emphasis on data collection, role of the physical therapist assistant (PTA), treatment techniques and procedures, equipment, patient/family education, and professional behaviors. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division. Corequisites: PTA206.

PTA208   5 Credits   9 Periods
Rehabilitation of Special Populations
Rehabilitation strategies for brain injured patients. Neurodevelopmental treatment (NDT) emphasized. Theories and alternative physical therapy treatment for neurologically impaired patients. Clinical applications and treatment of patients. Neurodevelopmental treatment (NDT), proprioceptive neuromuscular facilitation (PNF), cardiopulmonary rehabilitation, spinal cord injury management, and prosthetics/orthotics. Emphasis on proficiency in "hands on" techniques. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA210   4 Credits   6 Periods
Orthopedic Physical Therapy
Response of human bone and soft-tissue to injury. Orthopedic management and physical therapy procedures for common injuries of the extremities and spine. Common orthopedic surgeries. Joint mobilization techniques. Body mechanics and therapeutic exercise programs. Documentation procedures. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA214   2.5 Credits   4.5 Periods
Electromodalities
Electrical currents for physical therapy. Types of human muscular contractions. Safety stressed. Application of electrical currents for physical therapy. Uses and implications of electrical nerve tests. Bipophysical effects of transcutaneous electrical nerve stimulation. Use of low volt, high volt, and interferential electrical stimulation devices. Neuromuscular electrical stimulation (NMES). Use of biofeedback in physical therapy. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA215   1 Credit   1 Period
Wound Care for the Physical Therapist Assistant
Introduction to current concepts in wound care management techniques for the physical therapist assistant including skin anatomy and physiology, principles of healing, types of wounds, and therapeutic interventions. Prerequisites: Admission to the Physical Therapist Assisting program or permission of Department or Division.

PTA217   2 Credits   2 Periods
Clinical Neurology
Anatomy and function of the brain, spinal cord and peripheral nervous system. Evaluation of the motor innervation and spinal tracts. Specific diseases of the central and peripheral nervous systems related to physical therapy. Emphasis on clinical signs and symptoms of neurological disorders. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA230   2 Credits   2 Periods
Physical Therapy Seminar
Current practices and issues in physical therapy. Clinical problem solving, ethics, legal aspects, reimbursement, case management, research. Resume preparation and job interviewing skills. Stress management techniques. Total quality management principles. Employment issues. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division.

PTA280   **3 Credits**   **15 Periods**
Clinical Practicum II
Clinical experience with moderate supervision for physical therapist assisting students. Application of physical therapy skills and techniques in various clinical settings. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division. Corequisites: PTA281.

PTA281   **1 Credit**   **1 Period**
Clinical Practicum Seminar II
Integration of clinical experiences from clinical practicums and didactic theory and concepts. Emphasis on data collection, role of the physical therapist assistant (PTA), treatment techniques and procedures, equipment, patient/family education, and professional behaviors. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division. Corequisites: PTA280.

PTA290   **3 Credits**   **15 Periods**
Clinical Practicum III
Clinical experience with minimum supervision for physical therapist assisting students. Application of physical therapy skills and techniques in specific clinical settings. Prerequisites: Admission to the Physical Therapist Assisting program or permission of Department or Division. Corequisites: PTA292.

PTA292   **1 Credit**   **1 Period**
Clinical Practicum Seminar III
Integration of clinical experiences from clinical practicums and didactic theory and concepts. Emphasis on data collection, role of the physical therapist assistant (PTA), treatment techniques and procedures, equipment, patient/family education, and professional behaviors. Prerequisites: Admission to the Physical Therapist Assisting program, or permission of the Department or Division. Corequisites: PTA290.

PTA295   **2 Credits**   **2 Periods**
Physical Therapist Assistant Examination Review
Preparation for the physical therapist assistant examination administered by the Federation of State Boards of Physical Therapy. Topics include physical therapy management of patients with musculoskeletal, neurological, and cardiopulmonary diseases. Therapeutic modalities, therapeutic exercise, functional mobility activities, and patient assessment techniques. Documentation and ethical/legal considerations in practice of physical therapy. Prerequisites: Admission to the Physical Therapist Assisting program or permission of Department or Division.

PHYSICS (PHY)

PHY101   **4 Credits**   **6 Periods**
Introduction to Physics
A survey of physics emphasizing applications of physics to modern life. Prerequisites: Grade of "C" or better in MAT090, or MAT091, or MAT092, or MAT093, or equivalent, or satisfactory score on Math Placement exam. Students may receive credit for only one of the following: PHY101 or PHY101AA.

PHY111   **4 Credits**   **6 Periods**
General Physics I
Includes motion, energy, and properties of matter. Prerequisites: MAT182, or MAT 187, or one year high school Trigonometry with a grade of C or better, or permission of Department or Division.

PHY111 is recommended for preprofessional and suggested for certain other majors. Students may receive credit for only one of the following: PHY111 or PHY111AA.

PHY112   **4 Credits**   **6 Periods**
General Physics II
Includes electricity, electromagnetism, and modern physics. Prerequisites: PHY105 or PHY111.

PLASTERING/CEMENTING: APPRENTICESHIP (PCM)

PCM150   **5 Credits**   **5 Periods**
Tools for Exterior and Veneer Systems
Proper and safe apparel for plasters and cement masons. Tools used plasters and cement masons. Application of exterior insulating finish systems (EIFS) . Mixing primus/adhesive and installation of EIFS board. Types of exterior finishes, basecoats and their applications. Basecoat application, three-coat and two-coat processes. Leveling technique for the brown coat. Factors that impact admixers, setting times, bonding, drying times, temperature, and curing. Factors that impact stucco and veneer finishes. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PCM152   **5 Credits**   **5 Periods**
Cement Pouring and Finishing
Trade terms, history of cement development, types and uses of "portland" cement, aggregates and admixtures. Hand and power tools, form construction, concrete placement and finishing and the construction of tilt-up, precast and lift slabs. Prerequisites: None.

PCM153   **5 Credits**   **5 Periods**
Sketching and Plan Reading
Sketches and sketching procedures used in construction including "scale", sectional views and isometric drawings. Blueprint and plan reading for construction. Frame buildings, detail drawings and roof framing plans. Prerequisites: (Registered apprentice status and PCM152) or permission of the apprenticeship coordinator.

PCM154   **5 Credits**   **5 Periods**
Architectural Drawing and Blueprint Reading
Architectural drawings and sketches in construction. Reading and interpreting plot plans, blueprints and detail drawings. Relationship of specification sheets to construction blueprints. Prerequisites: (Registered apprentice status and PCM153) or permission of the apprenticeship coordinator.

PCM155   **5 Credits**   **5 Periods**
Estimating for the Concrete Trade
Mixing concrete and uses of concrete in construction. Calculations of amounts of concrete and forming material required for specific construction tasks. Quantity take-offs for construction projects. Calculation of labor costs. Prerequisites: (Registered apprentice status and PCM152) or permission of the apprenticeship coordinator.

PCM157   **5 Credits**   **5 Periods**
Trade Math and Safety for Concrete
Application of mathematic concepts and operations for the construction trades. Introduction to safety rules and practices for workers in the concrete trade. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PCM202   5 Credits   5 Periods
Interior and Exterior Basecoat
Safety in the Mason's workplace. Types, characteristics, uses, mixing and application of basecoat gypsum plasters. Characteristics, uses, and application of Portland cement. Mortar production. Three-coat and two-coat processes. Brown coat for gypsum plaster, brick, tile, and other masonry bases. Straightening and leveling of brown coat. Conventional and monolithic methods of plastering. Use and application of Portland cement/stucco. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

PCM204   5 Credits   5 Periods
Advanced Veneer Systems
Principles and techniques of advanced veneer systems. Joint reinforcing methods with one-coat and two-coat veneer systems. Precautions, application, usage, mixtures, and hardening/set up for gypsum finish coat plasters, gauging plasters and lime putty. Keenes cement, interior prepared gypsum, float finishes and Portland cement finishes. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

PLUMBING/PIPEFITTING: APPRENTICESHIP (PFT)

PFT101   6 Credits   6 Periods
Tools, Safety and Math
Orientation to the plumbing trade, apprentice responsibilities, and job safety. Cardiopulmonary resuscitation (CPR) and first aid. Materials and connections, care and use of tools. Mathematical problem solving and trade mathematics. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT101AA   2 Credits   2 Periods
Trade Safety
Orientation to the plumbing trade, apprentice responsibilities, and job safety. Cardiopulmonary resuscitation (CPR) and first aid. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT101AB   2 Credits   2 Periods
Trade Tools
Plumbing trade materials and connections. Care and use of tools. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT101AD   2 Credits   2 Periods
Trade Calculations
Trade calculations using whole numbers, decimals, fractions, percentages, discounts, slope, grade, volume, ratios, proportions, power and roots. Standard and metric methods of calculations. Blueprint dimensions. Trade specific calculations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT102   6 Credits   6 Periods
Basic Piping and Applications
Cast iron pipe, steel pipe, Durham system, and threading large pipe. Safety precautions and code requirements for installing fittings. Pipe connections, copper tubing, and plastics. Pipefitting, valves, and hangers used in the plumbing trade. Emphasis on hands-on training and the safe operation of pipe machines. Basic piping measurements and calculations. Shop training in pipe-threading procedures, soldering, and silver brazing techniques. Hazardous chemical safety. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT102AA   2 Credits   2 Periods
Basic Piping and Applications I
Cast iron pipe, steel pipe, Durham system, and threading large pipe. Safety precautions and code requirements for installing fittings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT102AB   2 Credits   2 Periods
Basic Piping and Applications II
Pipe connections, copper tubing, and plastics. Pipefitting, valves, and hangers used in the plumbing trade. Emphasis on hands-on training and the safe operation of pipe machines. Basic piping measurements and calculations. Shop training in pipe-threading procedures, soldering, and silver brazing techniques. Hazardous chemical safety. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT102AC   2 Credits   2 Periods
Basic Piping and Applications III
Basic piping measurements and calculations. Shop training in pipe-threading procedures, soldering, and silver brazing techniques. Hazardous chemical safety. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT103   6 Credits   6 Periods
Science, Rigging and Hoisting
Science and mechanics related to the plumbing trade. Properties of water and matter, hydraulic and pneumatic mechanics, metals and alloys. Corrosion. Rigging procedures including the use of fiber and wire rope for knots, hitches and slings. Use of hoisting equipment and cranes. Hoisting with helicopters. Safe and proper loading and unloading of hoisting equipment. Intermediate fitting projects and mathematical applications. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT103AA   2 Credits   2 Periods
Science and Mechanics
Science and mechanics related to the plumbing trade. Properties of water and matter, hydraulic and pneumatic mechanics, metals and alloys. Corrosion. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT103AB   2 Credits   2 Periods
Rigging and Cranes
Pipe Rigging procedures including the use of fiber and wire rope for knots, hitches and slings. Use of hoisting equipment and cranes. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT103AC   2 Credits   2 Periods
Hoisting and Intermediate Fitting Projects
Hoisting with helicopters. Safe and proper loading and unloading of hoisting equipment. Intermediate fitting projects and mathematical

applications. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT110   6 Credits   6 Periods
Drainage
Installation procedures for sewers and utilities. Draws, plumbing traps and drainage vents. Special drainage and safety requirements. Drain, waste and vent pipes. Vent systems and vent sizing. Installation and sizing of gas systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT112   6 Credits   6 Periods
HVAC I
Fundamentals of refrigeration and electricity. Refrigerants, basic evaporators/compressors, piping and expansion devices. Also alternating current systems, AC motors, overload protection and controllers. Testing and servicing of refrigeration equipment. Safety stressed. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT113   6 Credits   6 Periods
Isometric Drawing
Drafting skills and applied pipe drafting and isometric drawings. Selected drawings, building plans, and specifications. Isometric and non-isometric pipeline drawings. Mechanical plans for pipe layout systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT113AA   2 Credits   2 Periods
Isometric Drawing I
Drafting skills and applied pipe drafting and isometric drawings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT113AB   2 Credits   2 Periods
Isometric Drawing II
Selected drawings, building plans, and specifications. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT113AC   2 Credits   2 Periods
Isometric Drawing III
Isometric and non-isometric pipeline drawings. Mechanical plans for pipe layout systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT114   6 Credits   6 Periods
Basic Pipefitting and Welding
Pipefitting and welding equipment and safety. Fabrication and installation of commercial and industrial piping systems. Principles of parallel line development. Pipe layout and welding techniques for specific types of joints and branches. Welding procedures for old and odd angled fittings. Tack-up, weld-out, and spool welding techniques. Oxy-acetylene and portable plasma cutting torch. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT114AA   2 Credits   2 Periods
Basic Pipefitting and Welding I
Pipefitting and welding equipment and safety. Fabrication and installation of commercial and industrial piping systems. Principles of

parallel line development. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT114AB   2 Credits   2 Periods
Basic Pipefitting and Welding II
Pipe layout and welding techniques for specific types of joints and branches. Welding procedures for old and odd angled fittings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT114AC   2 Credits   2 Periods
Basic Pipefitting and Welding III
Tack-up, weld-out, and spool welding techniques. Oxy- acetylene and portable plasma cutting torch. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT201   6 Credits   6 Periods
Drawing, Prints and Specifications
Reading and interpretation of blueprints, building specifications, schematics and technical and isometric drawings. Interpretation of building plans and isometric drawings. Pipe sizing and installation of materials. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT201AA   2 Credits   2 Periods
Drawing, Prints and Specifications I
Reading and interpretation of blueprints, building specifications, and building plans. Includes architectural, mechanical, plumbing and electrical drawings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT201AB   2 Credits   2 Periods
Drawing, Prints and Specifications II
Reading and interpretation of technical and specific drawings. Plumbing blueprints and drawings. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT201AC   2 Credits   2 Periods
Drawing, Prints and Specifications III
Reading and interpretation of section and isometric drawings. Pipe sizing and installation of materials. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT202   6 Credits   6 Periods
Chiller Diagnostics I
Maintenance, replacement and repair of complete refrigeration and air conditioning systems. Includes principles and procedures required in the start-up, test/balance of systems, the proper use of testing and measuring instruments. Automatic control systems, control action, electrical and control diagrams, and application of motor controllers. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT203   6 Credits   6 Periods
Gas and Water Plumbing
Natural and Liquid Propane (LP) gas systems. Sizing and venting gas appliances and medical gas systems. Sizing of rain water systems. Installation of storm drains. Water distribution and treatment, water mains and services, hot water supply and water pipe sizing. Prerequisites:

Registered apprentice status or permission of the apprenticeship coordinator.

PFT203AA   2 Credits   2 Periods
Gas and Water Plumbing I
Natural and Liquid Propane (LP) gas systems. Sizing and venting gas appliances and medical gas systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT203AB   2 Credits   2 Periods
Gas and Water Plumbing II
Sizing of rain water systems. Installation of storm drains. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT205   6 Credits   6 Periods
HVAC II
Steam and hot water boilers; including the function and operation of parts and accessories, diagnosis of problems, and repairs. Boiler water testing and treatment. Principles of combustion and testing methods. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT206   6 Credits   6 Periods
Fixtures, Service and Special Purpose Installations
Handling and installation of plumbing fixtures and appliances. Special purpose installations including swimming pools, fountains, sprinkler and vacuum systems, and solar water heaters. Service related work and human relation skills required for service work. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT206AA   2 Credits   2 Periods
Fixtures
Handling and installation of plumbing fixtures and appliances. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT206AB   2 Credits   2 Periods
Service Work
Service related work and human relation skills required for service work. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT207   6 Credits   6 Periods
Pneumatic Controls
Study of pneumatic controls including their operation, application, installation, and servicing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT208   6 Credits   6 Periods
Uniform Plumbing Code
Advanced Uniform Plumbing Code (UPC) requirements and revisions. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT209   6 Credits   6 Periods
Welding
Basic oxy-acetylene and arc welding with emphasis on shop training. Includes history and purpose of oxy-acetylene, welding equipment and use. Safe welding practices. Application of the four essentials of arc welding. Weld types and related use in the field. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT210   6 Credits   6 Periods
HVAC III
Compressor function, operation, and construction with emphasis on the maintenance, repair, and overhaul procedures for reciprocating compressors. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT211   6 Credits   6 Periods
Steam and Hydronic Controls
Properties of saturated steam and steam heating systems. Steam traps, steam piping, and heat transfer equipment. Low-pressure and high-pressure steam boilers and control systems. Steam generating plants. Hydronic heating, cooling, and systems installation and operation. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT211AA   2 Credits   2 Periods
Steam and Hydronic Controls I
Properties of saturated steam and steam heating systems. Steam traps and steam piping. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT211AB   2 Credits   2 Periods
Steam and Hydronic Controls II
Heat transfer equipment. Low-pressure and high-pressure steam boilers and control systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT211AC   2 Credits   2 Periods
Steam and Hydronic Controls III
Steam generating plants. Hydronic heating, cooling, and systems installation and operation. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT212   6 Credits   6 Periods
Steamfitters and Plumbers Journeyman Examination Review, Application, and Supervision
Review, application and satisfactory score on journeyman "check out" exam. Supervisory techniques, economies, unionism, production, obligations, attitudes and procedures of journeymen. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT213   6 Credits   6 Periods
Pipefitters-Refrigeration Journeyman Examination Review, Application and Customer Relations
Review, application and successful completion of the pipefitter-refrigeration journeyman "check out" exam. Includes service techniques for improving customer relations. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

PFT273   2 Credits   2 Periods
Cross-Connection Control
Purpose and scope of cross-connections. Theory and devices for the prevention of backflow. Disassembly and testing procedures of backflow preventers. Prerequisites: Registered apprentice with the Arizona Pipe Trades Joint Apprenticeship Trust or permission of the apprenticeship coordinator.

PFT280   2 Credits   2 Periods
Medical Gas Installer Certification
Federal, state, and local regulations for medical gas and vacuum systems. Notification process and concepts related to medical gas installation. Product performance, installation requirements, and operating principles. Methods of testing and documentation and recording of test results. Field installation. Level Systems 1, 2, 3, and 4 as associated with facility and equipment requirements. Prerequisites: Registered Apprentice with the Arizona Pipe Trades Joint Apprenticeship Trust or permission of the apprenticeship coordinator.

POLITICAL SCIENCE (POS)

POS110   3 Credits   3 Periods
American National Government
Study of the historical backgrounds, governing principles, and institutions, of the national government of the United States. Prerequisites: None.

POS120   3 Credits   3 Periods
World Politics
Introduction to the principles and issues relating to the study of international relations. Evaluation of the political, economic, national, and transnational rationale for international interactions. Prerequisites: None.

POS130   3 Credits   3 Periods
State and Local Government
Survey of state and local government in the United States. Special attention on Arizona State government. Prerequisites: None.

POLYSOMNOGRAPHIC TECHNOLOGY (PSG)

PSG150   4 Credits   6 Periods
Introduction to Sleep Medicine
Introduction to the fundamental concepts of polysomnography, sleep technology and sleep medicine. Emphasis on nomenclature, technical and medical roles, normal sleep, sleep disorders, and professional organizations and resources. Prerequisites: Admission into the Polysomnography Technology program.

PSG160   3 Credits   5 Periods
Polysomnographic Procedures
Practical application of clinical procedures germane to the performance of polysomnography. Emphasis on patient assessment and communications, pre-test preparations, patient hook-up, instrument calibration and operation, test termination, cleanup and troubleshooting. Prerequisites: Admission into the Polysomnography Technology program.

PSG165   3 Credits   15 Periods
Clinical Polysomnography I
Introduction to a sleep disorders center, observation of a center conducting polysomnography, and participation in performance of associated procedures. Emphasis on patient preparation, testing protocol, instrument calibration and operation, documentation, and patient interactions. Prerequisites: Admission into the Polysomnography Technology program.

PSG170   3 Credits   5 Periods
Sleep Therapeutics
Review of sleep therapies to include medical treatment of insomnia, hypersomnia, Restless Legs Syndrome, Periodic Limb Movement Disorder, Rapid Eye Movement Sleep Behavior Disorder, Parasomnias, the use of Positive Airway Pressure Therapy and/or Oxygen Therapy to treat sleep-disordered breathing. Prerequisites: Admission into the Polysomnography Technology program.

PSG250   3 Credits   5 Periods
Record Scoring
Polysomnographic Record Scoring including Visual, Arousal, Cardiac, Movement, and Respiratory scoring rules outlined by the American Academy of Sleep Medicine. Polysomnogram report generation and calculations, Technical and Digital Specifications, Multiple Sleep Latency Test/Maintenance of Wakefulness Test scoring and reporting, and Archive and Data Storage, Abnormal Polysomnographic Record events, and Artifact recognition. Prerequisites: Admission into the Polysomnography Technology program.

PSG260   2 Credits   2 Periods
Special Topics in Polysomnography
Specialized techniques, equipment and procedures used in polysomnography. Emphasis on infant, pediatric and geriatric populations, disabled and emotionally/mentally challenged, Polysomnograms with legal implications, research, and less commonly performed procedures. Prerequisites: Admission into the Polysomnography Technology program.

PSG265   2 Credits   10 Periods
Clinical Polysomnography II
Participation in clinical polysomnography testing. Emphasis on patient preparation, troubleshooting, therapeutics, proper documentation, record review, scoring and report generation. Prerequisites: Admission into the Polysomnography Technology program.

PSG275   3 Credits   15 Periods
Clinical Polysomnography III
Clinical polysomnography testing. Emphasis on independent function and decision making, time management, record review, scoring and report preparation. Prerequisites: Admission into the Polysomnography Technology program.

POWER PLANT TECHNOLOGY (PPT)

PPT101   1 Credit   1 Period
Hand and Power Tools
Identification and use of hand and hand-held power tools used in the nuclear power plant. Tool construction and purpose. Maintenance of hand and power tools. Prerequisites: None.

PPT103   **1 Credit**   **1 Period**
Print Reading and Plant Drawings
Introduction to print reading and plant drawings. Flow diagrams and symbols on drawings. Dimension, tolerance and clearance on drawings. Amendments to drawings. Specific types of drawings. Proper procedures when using plant drawings. Prerequisites: None.

PPT118   **1 Credit**   **1 Period**
Conduct of Maintenance
Safety and management expectations. Defense in Depth strategy and Conduct of Verifications. Maintenance procedures. Work control process. Performance of work standards and documentation including pre-job preparation, pre-job notification, job review, job verification and job close out specific to nuclear power plant operations. Prerequisites: None

PPT200   **1 Credit**   **1 Period**
Industry Events
Information distribution; methods and avenues of communication. Material and design problems in the nuclear power plant. Procedural deficiencies of motor and equipment operation. Operation of sensitive equipment. Potential plant vulnerabilities. Personnel errors including mis-positioning, flooding, testing and procedural violations. Prerequisites: None.

PPT202   **2 Credits**   **2 Periods**
Plant Systems and Components I
Plant mission, numbering and drawing systems. Components and function of reactor coolant, volume control, safety injection, and nuclear sampling systems. Function and operation of main stream and turbine systems. Main and auxiliary feedwater systems. Operation and function of steam and heater drain systems. Prerequisites: None.

PPT203   **2 Credits**   **2 Periods**
Plant Systems and Components II
Advanced course on plant systems and components. Water, electrical and cooling systems. Safe shutdown cooling water system. Waste drain system. Fuel handling and storage systems. Fuel pool cooling and cleanup. Purpose and operation of radioactive waste management. Service air and gas systems. Ventilation and fire protection systems. Prerequisites: PPT202.

PPT204   **1 Credit**   **1 Period**
Measuring and Test Equipment
Administrative controls for precision measurement. Use of precision measuring equipment. Emphasis on proper use, accurate reading, and calculations using precision measuring devices. Prerequisites: None.

PSYCHOLOGY (PSY)

PSY101   **3 Credits**   **3 Periods**
Introduction to Psychology
To acquaint the student with basic principles, methods and fields of psychology such as learning, memory, emotion, perception, physiological, developmental, intelligence, social and abnormal. Prerequisites: None.

PSY230   **3 Credits**   **3 Periods**
Introduction to Statistics
An introduction to basic concepts in descriptive and inferential statistics, with emphasis upon application to psychology. Consideration given to the methods of data collection, sampling techniques, graphing of data, and the statistical evaluation of data collected through experimentation. Required of psychology majors. Prerequisites: PSY101 with a grade of "C" or better and MAT092 or equivalent, or permission of instructor.

PSY240   **3 Credits**   **3 Periods**
Developmental Psychology
Human development from conception through adulthood. Includes: physical, cognitive, emotional and social capacities that develop at various ages. Recommended for students majoring in nursing, education, pre-med, and psychology. Prerequisites: PSY101 with a grade of "C" or better or permission of the instructor.

PSY266   **3 Credits**   **3 Periods**
Abnormal Psychology
Distinguishes between normal behavior and psychological disorders. Subjects may include stress disorders, problems with anxiety and depression, unusual and abnormal sexual behavior, schizophrenia and addictive behaviors. Causes and treatments of psychological problems and disorders are discussed. Prerequisites: PSY101 with a grade of "C" or better, or permission of instructor.

PSY270   **3 Credits**   **3 Periods**
Personal & Social Adjustment
Surveys the basic mental health principles as they relate to coping with stress, interpersonal relationships, sex, marriage, and working. Emphasis on learning to become a more competent and effective person. Prerequisites: PSY101 with a grade of "C" or better or permission of the instructor.

PSY277   **3 Credits**   **3 Periods**
Psychology of Human Sexuality
Survey of psychological and physiological aspects of human sexual behavior. Emphasis placed on the integration of the cognitive, emotional, and behavioral factors in sexual functioning. Prerequisites: PSY101 with a grade of "C" or better, or permission of instructor. Student must be 18 years or older.

PSY290AB   **4 Credits**   **3 Periods**
Research Methods
Planning, execution, analysis, and written reporting of psychological research using American Psychological Association guidelines (APA). Surveys the literature, procedures, and instruments in representative areas of psychological research. Prerequisites: ENG101, or ENG107. Prerequisites or Corequisites: PSY230 with a grade of "C" or better, or permission of instructor.

RADIATION THERAPY (RTT)

RTT101   **2 Credits**   **2 Periods**
Foundations in Radiation Therapy
Foundational principles of radiation therapy. Historic overview, terminology, equipment, types of radiation and types of treatments used. Overview of major cancer treatment modalities with emphasis on the role of radiation therapy. Patient referral and process through diagnosis, consult, treatment planning, treatment and follow-up. Prerequisites: Admission to the Radiation Therapy program.

RTT110   2 Credits   2 Periods
Radiation Therapy Patient Care
Care of patients undergoing radiation therapy treatments. Examines psychosocial aspects, effects of cancer on the individual, family, siblings, different age groups and cultures. Study of grief, death and dying. Emphasis on patient assessment, treatment side effects, care and education. Includes professional self care. Prerequisites: Admission to the Radiation Therapy program.

RTT115   2 Credits   2 Periods
Radiobiology for Radiation Therapy
Cellular, tissue and whole body effects of radiation. Discussion of the theories and principles of tolerance dose, time-dose relationships, fractionation schemes and the relationship to clinical radiation therapy practice. Radiobiological effects of radiation and chemotherapy treatments. Prerequisites: Admission to the Radiation Therapy program.

RTT121   3 Credits   3 Periods
Radiation Therapy I: Physics and Calculations
Use of ionizing and particulate radiation in the patient care setting. Fundamental physical principles, units, measurements, atomic structure, and types of radiation. Review of simple proportions, algebraic equations, exponents, graphing, geometry, trigonometric, and logarithmic functions. Prerequisites: Admission to the Radiation Therapy program.

RTT122   3 Credits   3 Periods
Radiation Therapy II: Physics and Calculations
Application of general physics principles as related to Radiation Therapy Physics. Treatment units used in external beam and brachytherapy treatments, determination of radiation quality and quantity, measurement of radiation, absorbed dose measurements, dose distributions and scatter analysis. Prerequisites: RTT121 and Admission to the Radiation Therapy program.

RTT130   5 Credits   30 Periods
Clinical Internship I
Clinical internship designed to integrate didactic and clinical components of the radiation therapy program. Clinical application of radiation therapy knowledge, practices and procedures. Prerequisites: Admission to Radiation Therapy program or permission of program director.

RTT131   5 Credits   30 Periods
Clinical Internship II
Integration of didactic and clinical components of the radiation therapy program. Further clinical application of radiation therapy knowledge, practices and procedures. Prerequisites: RTT130 and Admission to the Radiation Therapy program. Corequisites: RTT140 or permission of instructor.

RTT132   5 Credits   30 Periods
Clinical Internship III
Integration of didactic and clinical components of the radiation therapy program. Continued application of radiation therapy knowledge, practices and procedures. Prerequisites: RTT131.

RTT133   2 Credits   2 Periods
Internship Seminar I
Further integration of clinical experiences and didactic theory and concepts. Overview of the therapist's role, safety, equipment, parameters, techniques, professional attitudes and behaviors and patient confidentiality. Prerequisites: Admission to the Radiation Therapy program.

RTT134   2 Credits   2 Periods
Internship Seminar II
Further integration of clinical experiences and didactic theory and concepts. Emphasis on patient assessment; treatment decisions, techniques and procedures; calculations and documentation. Prerequisites: Admission to the Radiation Therapy program.

RTT135   2 Credits   2 Periods
Internship Seminar III
Further integration of didactic theory and concepts with clinical experiences. Emphasis on patient education, quality assurance, departmental operations and professionalism. Prerequisites: Admission to the Radiation Therapy program.

RTT141   3 Credits   6 Periods
Dosimetry/Treatment Planning
Effects of treatment distance, field weighting, beam modifiers, irregular fields, tissue inhomogeneities and tissue compensation on dose. Includes dose calculations for external photon and electron beams and brachytherapy. Prerequisites: Admission to the Radiation Therapy program.

RTT145   4 Credits   4 Periods
Radiation Oncology
Major oncologic pathologies. Includes Epidemiology, etiology, natural history, histology, staging, workup, patterns of spread and treatment options. Basic principles of surgery, chemotherapy, radiation therapy. Emphasis placed on cancers of the brain, head and neck, breast, thorax, abdomen, pelvis, extremities and pediatric cancers. Prerequisites: Admission to the Radiation Therapy program.

RTT150   3 Credits   6 Periods
Clinical Radiation Therapy I
Basic principles of radiation therapy. Role of radiation therapy and rationale for treatment management decisions. Emphasis on technical aspects of treatment, beam modification, fractionation, dose determination, immobilization, treatment/simulation accessories and aides. Prerequisites: Admission to the Radiation Therapy program.

RTT151   2 Credits   5 Periods
Clinical Radiation Therapy II
Principles and practice of radiation therapy. Emphasis is placed on site specific simulation and treatment procedures and techniques. Computed Tomography (CT) simulation will be covered and emerging technologies. Prerequisites: Admission to the Radiation Therapy program.

RTT155   2 Credits   2 Periods
Professional Issues in Radiation Therapy
Current issues in the radiation therapy profession. Emphasis on research and professional involvement. Tools for informational acquisition,

evaluation and utilization. Overview of research types. Procedures for writing a research proposal. Prerequisites: Admission to the Radiation Therapy program.

RTT156   2 Credits   5 Periods
Quality Control/Organizational Issues
Principles of quality management with emphasis on specific quality assurance tests in radiation therapy. Examination of the health care market with current radiation therapy trends in health care environment. Includes radiation therapy operational and budgetary issues, hospital and governmental accreditation, types of insurance and reimbursements. Prerequisites: Admission to the Radiation Therapy program.

RTT160   2 Credits   2 Periods
Seminar in Radiation Therapy
Preparation for entry into radiation therapy profession. Job seeking skills, reflection of professional attitudes, values and personal development. Review of clinical and didactic information for state and national examinations. Prerequisites: Admission to the Radiation Therapy program.

READING (RDG)

RDG010   3 Credits   3 Periods
Reading English as a Second Language I
Designed for students who are learning English as a second language. Provides students with skills needed to become proficient readers in English. Teaches sound symbol relationships of the English alphabet. Expands essential vocabulary for daily communication both in isolation and context. Includes development of reading comprehension skills. Prerequisites: Appropriate ESL placement test score.

RDG020   3 Credits   3 Periods
Reading English as a Second Language II
Designed for students who are learning English as a second language. Includes continued development of vocabulary and reading comprehension skills. Prerequisites: Appropriate ESL placement test score, or grade of "C" or better in RDG010, or permission of instructor.

RDG030   3 Credits   3 Periods
Reading English as a Second Language III
Designed for students who are learning English as a second language. Includes instruction for more advanced vocabulary and reading comprehension skills. Prerequisites: Appropriate ESL placement test score, or grade of "C" or better in RDG020, or permission of instructor.

RDG040   3 Credits   3 Periods
Reading English as a Second Language IV
Developed for students of English as a second language. Includes development of advanced vocabulary, comprehension skills, and culture awareness. Prerequisites: Appropriate ESL placement test score or grade of "C" or better in RDG030 or permission of instructor.

RDG071   3 Credits   3 Periods
Basic Reading
Provide opportunities for practice and application of basic reading skills. Includes phonic analysis, word recognition, structural analysis, use of context clues, and use of dictionary, reinforced through practical application. Development of vocabulary required for success in content area courses. Emphasis on literal comprehension and development of inferential interpretation. Prerequisites: Appropriate reading placement test score, or grade of "C" or better in RDG040. Recommended for all students with limited reading experiences.

RDG081   3 Credits   3 Periods
Reading Improvement
Designed to improve basic reading skills. Includes word recognition, interdisciplinary vocabulary development, recognizing patterns of organization, interpreting inference. Reviews interpreting graphic materials. Emphasis on identifying main ideas and related details. Prerequisites: Appropriate reading placement test score, or grade of "C" or better in RDG071.

RDG091   3 Credits   3 Periods
College Preparatory Reading
Designed to improve basic reading and study skills, vocabulary and comprehension skills. Recommended to all students whose placement test scores indicate a need for reading instruction. Prerequisites: Appropriate reading placement test score, or grade of "C" or better in RDG081.

REALTIME REPORTING (RTR)

RTR101   6 Credits   10 Periods
Realtime Machine Shorthand I
Basic computer compatible Realtime machine shorthand theory. Prerequisites: 45 wpm typing keyboarding or permission of department/division. Corequisites: CTR/RTR197.

RTR102   6 Credits   10 Periods
Realtime Machine Shorthand II
Introduction of court briefs and phrases. Prerequisites: CTR/RTR101 or permission of department/program director.

RTR104   6 Credits   10 Periods
Machine Shorthand: Realtime Theory
Realtime theory reinforcement. Dictation to increase speed. Prerequisites: CTR/RTR101 or equivalent or permission of department/program director. May be repeated for a total of 6 (six) credit hours.

RTR197   1 Credit   5 Periods
Realtime Reporting Lab
Court reporting practice/transcription as assigned under supervision. Prerequisites: None. Corequisites: CTR/RTR101.

RTR201AA   2 Credits   2 Periods
Realtime Reporting I: Literary
Dictation, transcription, and readback of Literary material at 80 words per minute. Required speed development: 80 words per minute. Prerequisites: CTR/RTR102 or permission of department/program director.

RTR201AB   2 Credits   2 Periods
Realtime Reporting I: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 100 words per minute. Required speed development: 100 words per minute. Prerequisites: CTR/RTR102 or permission of department/program director.

RTR201AC   2 Credits   6 Periods
Realtime Reporting I: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 120 words per minute. Required speed development: 120 words per minute. Prerequisites: CTR/RTR102 or permission of department/program director.

RTR202AA   2 Credits   2 Periods
Realtime Reporting II: Literary
Dictation, transcription, and readback of Literary material at 100 words per minute. Required speed development: 100 words per minute. Prerequisites: CTR/RTR201AA or permission of department/program director.

RTR202AB   2 Credits   2 Periods
Realtime Reporting II: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 120 words per minute. Required speed development: 120 words per minute. Prerequisites: CTR/RTR201AB or permission of department/program director.

RTR202AC   2 Credits   6 Periods
Realtime Reporting II: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 140 words per minute. Required speed development: 140 words per minute. Prerequisites: CTR/RTR201AC or permission of department/program director.

RTR203AA   2 Credits   2 Periods
Realtime Reporting III: Literary
Dictation, transcription, and readback of Literary material at 120 words per minute. Required speed development: 120 words per minute. Prerequisites: CTR/RTR202AA or permission of department/program director.

RTR203AB   2 Credits   2 Periods
Realtime Reporting III: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 140 words per minute. Required speed development: 140 words per minute. Prerequisites: CTR/RTR202AB or permission of department/program director.

RTR203AC   2 Credits   6 Periods
Realtime Reporting III: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 160 words per minute. Required speed development: 160 words per minute. Prerequisites: CTR/RTR202AC or permission of department/program director.

RTR204AA   2 Credits   2 Periods
Realtime Reporting IV: Literary
Dictation, transcription, and readback of Literary material at 140 words per minute. Required speed development: 140 words per minute. Prerequisites: CTR/RTR203AA or permission of department/program director.

RTR204AB   2 Credits   2 Periods
Realtime Reporting IV: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 160 words per minute. Required speed development: 160 words per minute. Prerequisites: CTR/RTR203AB or permission of department/program director.

RTR204AC   2 Credits   6 Periods
Realtime Reporting IV: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 180 words per minute. Required speed development: 180 words per minute. Prerequisites: CTR/RTR203AC or permission of department/program director.

RTR205AA   2 Credits   2 Periods
Realtime Reporting V: Literary
Dictation, transcription, and readback of Literary material at 160 words per minute. Required speed development: 160 words per minute. Prerequisites: CTR/RTR204AA or permission of department/program director.

RTR205AB   2 Credits   2 Periods
Realtime Reporting V: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 180 words per minute. Required speed development: 180 words per minute. Prerequisites: CTR/RTR204AB or permission of department/program director.

RTR205AC   2 Credits   6 Periods
Realtime Reporting V: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 200 words per minute. Required speed development: 200 words per minute. Prerequisites: CTR/RTR204AC or permission of department/program director. Corequisites: CTR211 or permission of department/division.

RTR206AA   2 Credits   2 Periods
Realtime Reporting VI: Literary
Dictation, transcription, and readback of Literary material at 180 words per minute. Required speed development: 180 words per minute. Prerequisites: CTR/RTR 205AA or permission of instructor.

RTR206AB   2 Credits   2 Periods
Realtime Reporting VI: Jury Charge
Dictation, transcription, and readback of Jury Charge material at 200 words per minute. Required speed development: 200 words per minute. Prerequisites: CTR/RTR205AB or permission of instructor.

RTR206AC   2 Credits   6 Periods
Realtime Reporting VI: Question/Answer
Dictation, transcription, and readback of Question/Answer testimony material at 225 words per minute. Required speed development: 225 words per minute. Prerequisites: CTR/RTR205AC or permission of instructor.

RTR207   5 Credits   6 Periods
Captioning Environment I
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Broadcast Captioning. Dictation, speed building, and dictionary building using machine shorthand, a computer, and computer-aided transcription (CAT) software in the following areas: sports, meteorology, geography, common proper names, government/politics, foods, arts, animals, criminology, entertainments, military installations, slang, current national names in the news, common female and male first names, literature, science, math, geography, science, political science, history, English/literature, current events, medical, common proper names and religion. Prerequisites: RTR205AA or permission of department/division. Corequisites: RTR237.

RTR208   5 Credits   6 Periods
CART Environment I
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Communication Access Realtime Translation (CART). Dictation, speed building, and dictionary building using machine shorthand, a computer, and computer-aided transcription (CAT) software in the following areas: mathematics, ceography, science, political science, history, English/literature, current events, medical, and common proper names. Prerequisites: RTR205AA or permission of department/division. Corequisites: RTR238.

RTR209   3 Credits   5 Periods
Judicial Procedures for Realtime Reporting
Professional procedures, techniques, ethics, and introduction to video applications for judicial court reporters. Proper transcription methods and correct formatting styles for transcript production. Prerequisites: RTR203 or permission of department/division.

RTR211   1 Credit   5 Periods
Judicial Internship
A minimum of 50 hours participation in an actual courtroom deposition setting. Transcript production required. Prerequisites: CTR/RTR209 and/or permission of department/division. Corequisites: CTR/RTR205AC or permission of department/division.

RTR215   3 Credits   3 Periods
Computer-Aided Transcription
Computer terminology, trouble-shooting and basic maintenance of a computer-aided transcription (CAT) system. Realtime reporting system set-up, maintenance and operation. Realtime system applications in specific environments. Production of transcripts from dictation and with a computer-aided transcription system. Prerequisites: CTR/RTR101 or permission of department/division.

RTR217   5 Credits   6 Periods
Captioning Environment II
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Broadcast Captioning. Dictation, speed building, and dictionary building using machine shorthand, a computer, and computer-aided technology (CAT) software in the following areas: sports, meteorology, geography, common proper names, government/politics, foods, arts, animals, criminology, entertainments, military installations, slang, current national names in the news, common female and male first names, literature, science, and religion. Prerequisites: (RTR205AA and RTR207) or permission of department/division. Corequisites: RTR237.

RTR218   5 Credits   6 Periods
CART Environment II
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Communication Access Realtime Translation (CART) provision in classroom and additional settings. Dictation, speed building, and dictionary building using machine shorthand, a computer and computed-aided transcription (CAT) software in the following areas: mathematics, geography, science, political science, history, English/literature, current events, medical and common proper names. Prerequisites: (RTR205AA or permission of department/division) and RTR208. Corequisites: RTR238.

RTR221   1 Credit   5 Periods
Realtime CART Internship
Internship of a minimum of 40 hours of realtime writing under the supervision of a practicing Communication Access Realtime Translation (CART) provider or institutional instructor. Includes the production of a realtime translation of one hour of CART services. Prerequisites: (RTR205AA and RTR207) or permission of department/division.

RTR225   4 Credits   4 Periods
Realtime CART Technology
Hands-on instruction in the operation of the computer and computer-aided (CAT) software for use in Communication Access Realtime Translation (CART) writing. Prerequisites: RTR204AA or permission of department/division.

RTR227   5 Credits   6 Periods
Captioning Environment III
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Broadcast Captioning. Dictation, speed building, and dictionary building using machine shorthand, a computer, and computer-aided transcription (CAT) software in the following areas: sports, meteorology, geography, common proper names, government/politics, foods, arts, animals, criminology, entertainments, military installations, slang, current national names in the news, common female and male first names, literature, science and religion. Prerequisites: (RTR205AA or permission of department/division) and RTR217. Corequisites: RTR237.

RTR228   5 Credits   6 Periods
CART Environment III
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Communication Access Realtime Translation (CART) provision in classroom and additional settings. Dictation, speed building, and dictionary building using machine shorthand, a computer and computer-aided transcription (CAT) software in the following areas: mathematics, geography, science, political science, history, English/literature, current events, medical and common proper names. Prerequisites: (RTR205AA or permission of department/division) and RTR218. Corequisites: RTR238.

RTR235   1 Credit   1 Period
CAT Dictionary Building
Principles of machine shorthand to include definitions, brief forms and phrases. Dictation of technical, legal, and medical language and phrases related to the court reporting profession. Literacy in the use of CAT software. Edit and use computer-aided transcription software dictionaries. Prerequisites: CTR/RTR102 and CTR/RTR215.

RTR237   1 Credits   5 Periods
Broadcast Captioning Lab
Machine shorthand realtime writing with an emphasis on writing for the deaf and hard of hearing for Broadcast Captioning. Dictation, speed building, and dictionary building using machine shorthand, a computer and computer-aided transcription (CAT) software in the following areas: sports, meteorology, geography, common proper names, government/politics, foods, arts, animals, criminology, entertainments, military installations, slang, current national names in the news, common female and male first names, literature, science and religion. Prerequisites: RTR205AA or permission of department/division. Corequisites: RTR207, RTR217, and RTR227.

RTR238   1 Credits   5 Periods
CART Environment Lab
Machine shorthand realtime writing with an emphasis of writing for Communication Access Realtime Translation (CART) providing for the deaf and hard of hearing. Online dictation, speed building, and dictionary building using machine shorthand, a computer, and computer-aided transcription (CAT) software in the following areas: mathematics, geography, science, political science, history, English/literature, current events, medical and common proper names. Prerequisites: RTR205AA or permission of department/division. Corequisites: RTR208, RTR218, and RTR228.

RTR241   1 Credit   5 Periods
Broadcast Captioning Internship
Internship of a minimum of forty (40) hours of realtime writing under the supervision of a practicing Broadcast Captioner or institutional instructor. Production of an unedited, captioned translation of one hour of captioning services for educational and grading purposes only. Prerequisites: (RTR205AA and RTR207) or permission of department or division.

RTR245   4 Credits   4 Periods
Broadcast Captioning Technology
Lecture and taped broadcast news programming and hands-on instruction in the operation and maintenance of a broadcast captioning on-line translation system. Instruction in news production preparation, prescripting, and the psychology of on-air captions, Federal Communications Commission (FCC) regulations, and deaf culture. Prerequisites: RTR204AA or permission of department or division.

RTR290   2 Credits   2 Periods
Registered Professional Reporter Preparation
Live dictation practice to increase speed in any machine shorthand system in preparation for the national Court Reporters Association RPR Test. Prerequisites: One year of machine shorthand or equivalent. May be repeated for a total of (10) credit hours.

RTR291   1 Credit   1 Period
Extended Machine Shorthand Practice
Dictation and testing in Literary, Jury Charge, and Question/Answer testimony material at incremental speeds for the purpose of the student to increase machine shorthand speed and accuracy. Readback of paper or computerized notes. Prerequisites: Permission of Program Director or Instructor. May be repeated for a total of twelve (12) credit hours.

RELIGIOUS STUDIES (REL)

REL205   3 Credits   3 Periods
Religion and the Modern World
Introduction to the nature and role of religious beliefs and practices in shaping the lives of individuals and societies, with particular attention to the modern world. Prerequisites: ENG101, or ENG107, or equivalent.

REL212   3 Credits   3 Periods
Introduction to Islam
Introduction to History, scriptures, practices and impact of Islam. Prerequisites: None.

REL243   3 Credits   3 Periods
World Religions
The development of various religions from the prehistoric to modern times. Political, economic, social and geographic relationships among world religions. Consideration of both Eastern and Western religions. Prerequisites: None.

RESPIRATORY CARE (RES)

RES109   0.5 Credit   0.5 Period
CPR for Health Care Provider
Current American Heart Association standards for one and two rescuer cardiopulmonary resuscitation (CPR) and obstructed airway procedures on the adult, infant, and pediatric victim. Use of automatic, external defibrillator and resuscitation equipment. Prerequisites: None.

RES130   5 Credits   9 Periods
Respiratory Care Fundamentals I
Review of existing clinical data and recommendations. Data required to determine appropriateness of prescribed respiratory care plan. Administration of basic respiratory care therapeutics to include medical gas administration, oxygen therapy administration, and humidity/aerosol therapy administration. Use and maintenance of select respiratory equipment. Use of communication skills during interactions with members of the health care team and patients. Ethical, legal and professional work behaviors. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES133.

RES133   3 Credits   3 Periods
Respiratory Care Clinical Seminar
Clinical application of concurrent respiratory care course work with emphasis on professionalism, medical record evaluation, communication, universal precaution, infection control, patient safety, patient assessment, age related care, cultural competence, routine hospital regulations, patient education and introduction to respiratory disease and treatment. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES130.

RES134   2 Credits   2 Periods
Respiratory Care Pharmacology
Pharmacologic principles related to the treatment of Acute and Chronic Pulmonary Disease. Information on bronchodilators, mucokinetics, surfactants, anti-inflammatory, antiasthmatic and anti-infective agents to include mechanism of action, general drug information, side effects, and respiratory care considerations. Prerequisites: Admission into the Respiratory Care program. Corequisites: HCC164.

RES136   3 Credits   3 Periods
Applied Biophysics for Respiratory Care
Physical principles specific to ventilation. Laws of physics and their relationship to the respiratory system and the application of respiratory care equipment. Role of respiratory care during specific diagnostic procedures. Use of mathematical formulae. Prerequisites: Admission into the Respiratory Care program.

RES140   5 Credits   9 Periods
Respiratory Care Fundamentals II
Continuation of basic respiratory care procedures to include patient assessment and monitoring, chest physiotherapy techniques and pulmonary rehabilitation. Hyperinflation therapy, airway management and introduction to mechanical ventilation. Equipment operation, quality assurance and maintenance. Use of communications skills during interactions with health care team members and patients. Ethical, legal and professional work behaviors. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES 142.

RES142   3 Credits   15 Periods
Respiratory Care Clinical I
Clinical application of concurrent respiratory care course work with emphasis on professionalism, medical record evaluation and performance of oxygen therapy, aerosol therapy, chest physiotherapy techniques, hyperinflation therapy, airway management devices and techniques, and observation of mechanical ventilation. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES140.

RES200   4 Credits   4 Periods
Microbiology for Respiratory Care
Classification of microorganisms by cell type, cell characteristics, and microbial relationships. Select methods for identifying microorganisms. Gram-positive and negative bacteria. Structure and characteristics of mycoplasma organisms. Structure, characteristics and diseases caused by viruses. Types of fungi and diseases they produce. Frequently encountered pathogenic organisms and normal flora of the body. Prerequisites: Admission into the Respiratory Care program.

RES220   5 Credits   9 Periods
Respiratory Care Fundamentals III
Advanced respiratory care therapy and assessment techniques to include, ventilator set-up and management. Diagnostic testing specific to assessment of oxygenation and ventilation and specific respiratory care procedures utilized in critical care. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES226.

RES226   3 Credits   15 Periods
Respiratory Care Clinical II
Clinical application of all prerequisite respiratory care course work with emphasis on adult critical care and neonatal/pediatric. Performance of general floor and critical care procedures. Advanced patient assessment and monitoring. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES220.

RES230   4 Credits   6 Periods
Respiratory Care Fundamentals IV
Advanced respiratory care therapy and assessment techniques to include hemodynamic monitoring, performance and interpretation of pulmonary function testing. Assisting physicians during special procedures. Development of advanced respiratory care plans and clinical research techniques. Equipment operation, quality assurance, and maintenance. Use of effective communication skills with members of the health care team and patients. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES232.

RES232   3 Credits   15 Periods
Respiratory Care Clinical III
Clinical application of all prerequisite respiratory care course work with emphasis on adult critical care and neonatal/pediatric care. Basic and critical care therapeutics, advanced patient assessment and monitoring. Assisting physician during special procedures. Increased responsibility for total patient care, work organization and time management. Prerequisites: Admission into the Respiratory Care program. Corequisites: RES230.

RES235   2 Credits   2 Periods
Respiratory Care Pharmacology II
Pharmacologic principles specific to the care of the respiratory patient in the acute care environment to include: cardiac and renal agents, blood pressure and antithrombotic agents, neuromuscular, anesthetic, sedative, analgesic agents. Prerequisites: Admission into the Respiratory Care program.

RES240   3 Credits   3 Periods
Respiratory Physiology
Physiology of the respiratory, cardiovascular and renal systems as related to oxygenation and ventilation of the human body. Physiologic mechanisms of breathing. Role of capillary circulation in fluid regulation. Impact of respiratory care procedures on the organ systems. Prerequisites: Admission into the Respiratory Care program.

RES270   2 Credits   2 Periods
Neonatal and Pediatric Respiratory Care
Neonatal and pediatric respiratory care to include development, anatomical and physiological differences, assessment, basic respiratory care procedures, mechanical ventilation and common disorders and conditions. Specific computer and communication skills. Prerequisites: Admission into the Respiratory Care program.

RES280   2 Credits   2 Periods
Respiratory Care Review
Data interpretation, equipment operation and therapeutic procedures specified for the National Board for Respiratory Care Entry Level Therapist examination. Quality control and therapeutic procedures. Pharmacologic agents and treatment of cardiopulmonary collapse. Pulmonary rehabilitation and home care. Prerequisites: Admission into the Respiratory Care program.

RES291   1 Credit   1 Period
Respiratory Care Advanced Life Support
Airway management for the adult, patient. Endotracheal and suctioning procedures. Usage of specific medications for cardiovascular emergencies. Interpretation of Electrocardiograms (ECG) dysrhythmias. Performance of defibrillation and synchronized cardioversion in simulated situations. Procedure to be followed during cardiovascular collapse. Special resuscitation techniques for adult patients. Current American Heart Association validation in Advance Life Support (ACLS). Prerequisites: Admission into the Respiratory Care program.

RES297   2 Credits   2 Periods
Respiratory Care Seminar
Presentation of case scenarios of various patient type and disease processes. Application of general principles of respiratory care to arrive at clinical solutions. Prerequisites: Admission into the Respiratory Care program.

ROOFING (ROF)

ROF101   5 Credits   5 Periods
Built-Up Roofing I
Roofing including roofing terminology and historical background. Safe use of roofing tools, equipment and materials. Emphasis on built-up roofing procedures and applications. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

ROF102   5 Credits   5 Periods
Built-Up Roofing II
Emphasis on advanced skills in built-up roofing (BUR) installation. BUR products, their manufacturing processes in relationship to installation and handling requirements. Prerequisites: ROF 101 or permission of apprenticeship coordinator.

ROF103   5 Credits   5 Periods
Elasto-Plastic Roof Systems
Elasto-plastic roof systems (EPRS). Methods of application and attachment as roofing membranes. Prerequisites: ROF102.

ROF104   5 Credits   5 Periods
Steep Roofing
Steep roofing practices and procedures. Includes asphalt roll material and shingles, wood and asbestos shingles, slate and tile. Prerequisites: ROF103.

ROF105   5 Credits   5 Periods
Single-Ply Roofing
Qualities, advantages, disadvantages, materials and manufactured products for single-ply roofing. Safe work practices. Types of single-ply systems. Installation of single-ply roofing systems. Installation of ethylene propylene diene monomer (EPDM), hot-air weld and modified bitumen roof systems. Detailing. Lining and waterproofing. Maintenance and repair of roof systems. Prerequisites: ROF104.

SHEET METAL: APPRENTICESHIP (SML)

SML111   5 Credits   5 Periods
Sheet Metal I
History and background of the sheet metal apprentice. Basics of grafting, layout and pattern development used in the sheet metal trade. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML112   5 Credits   5 Periods
Sheet Metal II
The importance of time management. Layout and pattern development. Use of power equipment and common sheet metal materials, trade mathematics and orientation to air flow movement. Prerequisites: SML111.

SML113   5 Credits   5 Periods
Sheet Metal III
Safe use of hand tools. Also, seams and locks and types of materials common to the sheet metal industry. Basic mathematics and introduction to service work, and field installation covered. Prerequisites: SML112.

SML114   5 Credits   5 Periods
Sheet Metal IV
Field installations emphasizing hanging duct, inserts, equipment and housings. Includes roofs and roof pitch, blueprint reading and sheet metal drafting. Also, residential heating and air conditioning, blowpipe, plastics and fiberglass. Overview of food service equipment. Prerequisites: SML113.

SML115   5 Credits   5 Periods
Basic Refrigeration
Environmental service industry. Refrigeration tools instruments and gauges. Tubing and pipe. Tubing fabrication procedures utilizing torches, soldering and brazing. Refrigeration principles including pressure and pressure measurements, temperature and characteristics of heat. Refrigeration system components, terminology and operation. Compressors, metering devices and refrigerant. Preparing and charging systems. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML116   5 Credits   5 Periods
Refrigeration Systems I
Servicing small hermetic refrigeration units. Leak testing, charging and adding oil to a hermetic system. Diagnosing internal faults in a hermetic system. Checking refrigerant levels and charging a commercial refrigeration system. Removing refrigerant and adding oil to a commercial system. Determining system balance for a commercial refrigeration system. Environmental Protection Agency (EPA) requirements for the recovery, recycling and reuse of chlorofluocarbon refrigerants (CFCs). Equipment used in recovery, recycling and reclaiming procedures. Prerequisites: (Registered apprentice status and SML115) or permission of the apprenticeship coordinator.

SML117   5 Credits   5 Periods
Refrigeration Systems II
Basic concepts of electricity, alternating current and electrical schematics and diagrams. Control circuits, layouts and troubleshooting. Ohms law and circuit operating characteristics. Capacitors and capacitor testing, power factors, single phase and three phase transformers. Prerequisites: (Registered apprentice status, SML115 and SML116) or permission of the apprenticeship coordinator.

SML118   5 Credits   5 Periods
Refrigeration Systems III
Single phase induction motors, three phase induction motors and special motors. Electric motor protection. Servicing electric motors, hermetic compressor motor protection and servicing hermetic motors. Includes introduction to electronic devices, testing electronic devices, circuits and electronic device applications. Prerequisites: (Registered apprentice status and SML117) or permission of the apprenticeship coordinator.

SML119   5 Credits   5 Periods
Refrigeration Systems IV
Specific heating ventilation, air conditioning (HVAC) principles. Properties of air and air flow through ducts. Methods to balance air and water flow. Heating, ventilation air conditioning parts and equipment. Layout, operation, start up procedures, and service of specific systems and devices. Alternative heating methods. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML120   5 Credits   5 Periods
Refrigeration Systems V
Heating and cooling systems start-up, operation and service. Water cooled and heated systems. Central air conditioning. Head pumps. Condensers and compressors. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML121   5 Credits   5 Periods
Refrigeration Systems VI
Specific commercial system applications. Basic concepts of heat recovery. Installation and capacities of commercial evaporators. Features of commercial defrost systems. Installation and application of commercial system components. Procedures for checking and testing commercial systems. Servicing commercial systems and components. Leak testing and evacuation. Servicing refrigerant components. Factors related to heat loads. Constant volume/variable temperature. Operation of multizone units. Safety practices. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML122   5 Credits   5 Periods
Refrigeration Systems VII
Control system fundamental concepts. Pneumatic control systems. Pneumatic thermostats and auxiliary devices. Pneumatic damper and valve control. Calibration, troubleshooting and maintenance procedures. Electric and electronic control systems. Computerized building management. Zone control systems, operation and service. Variable air volume system and terminal control. Direct Digital Control (DDC) systems and devices. Timers, thermostats and load controllers. Energy management and safety. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML130   5 Credits   5 Periods
Insulation, Air, Layout and Fabrication
Purpose and installation of air distribution accessories. Thermal and acoustic insulation, fibrous glass duct liner and fiberglass blanket and fiberglass pipe and flexible foam insulation. Sheet metal layout and processes, terminology, tools, and safety. Parallel and radial line development and triangulation. Layout and fabrication of ductrun fittings. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

SML211   5 Credits   5 Periods
Sheet Metal V
Intermediate drafting skills with more complicated pattern layout development. Operation and safety methods for hand operated shop machines. Use of special materials. Introduction to the use of formulas. Prerequisites: SML114.

SML212   5 Credits   5 Periods
Sheet Metal VI
Advanced layout and pattern development. Use of special sheet metal power equipment. Also, trigonometric functions as applicable to the sheet metal trade and basic principles of refrigeration and air conditioning, field installation procedures. Prerequisites: SML211.

SML213   5 Credits   5 Periods
Sheet Metal VII
Various types of formulas and their functions. Moving heavy equipment and planning a duct job in the field. Requirements, types, seams and locks for architectural sheet metal covered. Also, blueprint reading, residential heating and air conditioning, and blowpipe systems. Prerequisites: SML212.

SML214   5 Credits   5 Periods
Sheet Metal VIII
Advanced blueprint and detailing including materials estimates. Solar heating principles and installation procedures. Also, use of plastics, installation of food service equipment and sign building. Rigid fibrous duct board, sound attenuation, testing and balancing. Prerequisites: SML213.

SML215   5 Credits   5 Periods
Ducts, Drainage and Ventilation
Process of soldering common and special materials. Methods for supporting ducts including taping of hangers and fasteners. Calculations for roof drainage systems. Principles of ventilation. Safety procedures stressed. Prerequisites: (Registered apprentice status, SML213 and SML214) or permission of the apprenticeship coordinator.

SML216   5 Credits   5 Periods
Duct Systems and Methods of Welding
Principles of air-flow within duct systems. Includes duct system components, types of duct materials and methods of duct construction. Introduction to welding plastics and metals. Safety stressed. Prerequisites: (Registered apprentice status, SML213 and SML214) or permission of the apprenticeship coordinator.

SML217   5 Credits   5 Periods
Blueprint Reading and Principles of Air Conditioning
Components of blueprint plans to coordinate sheet metal work with other trades. Reading and interpreting of specifications, mechanical plans, electrical plans, industrial plans and specialty plans. Basic principles of air-conditioning. Emphasizes air distribution, outlets, applied load estimating, commercial and residential load estimating, residential and commercial controls, and the metric system. Prerequisites: (Registered apprentice status, SML213 and SML214) or permission of the apprenticeship coordinator.

SML220   5 Credits   5 Periods
Environmental Systems I
General care and use of instruments. Fluid and air flow in heating, ventilating, and air conditioning (HVAC) systems. Principles of heat flow, heat transfer and the refrigeration cycle. Fundamentals of electricity. Automatic control systems. Test measurements using volt-ammeters, tachometers and thermometers. Air pressure and air flow measurements. Basic operating principles of HVAC systems and duct systems. Fans, cautions, construction and fan laws. Testing, adjusting and balancing (TAB) forms. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML226   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems I
Field measuring and fitting. Air and duct systems and air source equipment. Welding practices, and arc-welding procedures. Brazing and flame cutting. Mechanical refrigeration fundamentals, mechanical systems, and heat pumps. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML228   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems II
Principals of airflow. Comprehensive blueprint and specification reading. Fabrication and triangulation. Roofing materials, gutters, downspouts, and chimneys. Installation techniques of elbows, outlet tubes, gutters and gutter outlets, and roof, chimney, and wall flashing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML230   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems III
Estimating labor, materials, equipment, and delivery. Staff organization and staff relations. Shop production. Coordination with other trades. Air balance principle and systems. Layout and fabrication methods. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SML240   **5 Credits**   **5 Periods**
Construction Sheet Metal and Mechanical Systems IV
Layout and fabrication of louvers, dampers and access doors. Room and building ventilation. Moisture, humidity, temperature, energy and air flow. Fume and exhaust systems and components. Crew Leader skills. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SIGN LANGUAGE (SLG)

SLG101   **4 Credits**   **4 Periods**
American Sign Language I
Introduction of principles, methods, and techniques for communicating with deaf people who sign. Development of expressive and receptive sign skills, manual alphabet, numbers, and sign vocabulary. Overview of syntax, grammar, and culture related to American Sign Language (A.S.L.). Prerequisites: None. SLG103 suggested as a corequisite but not required

SOCIAL WORK (SWU)

SWU102   **3 Credits**   **3 Periods**
Introduction to Social Work
An introduction to the fields within the area of social work through a study of the disciplines of social case work, social group work, and community organization. Opportunities to experience the various techniques of practice within each discipline. Required for students enrolled in the associate degree program of the social work curriculum. Prerequisites: Eligibility for ENG101 and CRE101.

SWU291   **3 Credits**   **3 Periods**
Social Service Delivery Systems
Purposes, structures, and delivery systems of human service agencies. Includes 40 hours of volunteer experience in local human service agencies. Prerequisites or Corequisites: SWU102, or SWU171, or permission of the department

SWU292   **3 Credits**   **3 Periods**
Effective Helping in a Diverse World
Introduction to professional helper communication skills with respect to cross-cultural practice and diversity issues, in a social work setting. Prerequisites: None. (SOC101 and SWU102) or SWU171 suggested but not required.

SOCIETY AND BUSINESS (SBU)

SBU200   **3 Credits**   **3 Periods**
Society and Business
The study of issues and demands placed on business enterprise by owners, customers, government, employees and society. Included are social, ethical and public issues and analysis of business responses. Prerequisites: None.

SOCIOLOGY (SOC)

SOC101   **3 Credits**   **3 Periods**
Introduction to Sociology
Fundamental concepts of social organization, culture, socialization, social institutions and social change. Prerequisites: None.

SOC212   **3 Credits**   **3 Periods**
Gender and Society
A sociological analysis of the way culture shapes and defines the positions and roles of both men and women in society. Major emphasis on social conditions which may lead to a broadening of gender roles and a reduction of gender role stereotypes and the implications of these changes. Open to both men and women. Prerequisites: None.

SOC270   **3 Credits**   **3 Periods**
The Sociology of Health and Illness
Roles of health care providers and patients, various modalities of treatment and prevention, and the history, current status, and future trends in medicine and medical technology, from a cross-cultural sociological perspective. Prerequisites: SOC101 or permission of instructor.

SPANISH (SPA)

SPA101   **4 Credits**   **4 Periods**
Elementary Spanish I
Basic grammar, pronunciation and vocabulary of the Spanish language. Includes the study of the Spanish-speaking cultures. Practice of listening, speaking, reading, and writing skills. Prerequisites: None.

SPA102   **4 Credits**   **4 Periods**
Elementary Spanish II
Continued study of grammar and vocabulary of the Spanish language, and study of Spanish-speaking cultures. Emphasis on speaking, reading, and writing skills. Prerequisites: SPA101 or departmental approval.

SPA115   **3 Credits**   **3 Periods**
Beginning Spanish Conversation I
Basic pronunciation, vocabulary, sentence structures, and cultural awareness, necessary to develop speaking and listening skills in Spanish. Prerequisites: None.

SPA201   4 Credits   4 Periods
Intermediate Spanish I
Continued study of essential Spanish grammar and Spanish-speaking cultures. Continued practice and development of reading, writing, and speaking skills in Spanish. Emphasis on fluency and accuracy in spoken Spanish. Prerequisites: SPA102, or SPA111, or permission of department.

SPA202   4 Credits   4 Periods
Intermediate Spanish II
Review of grammar, continued development of Spanish language skills with continued study of the Spanish-speaking cultures. Prerequisites: SPA201 or departmental approval.

SUNDTCORP (SUN)

SUN101   2 Credits   2 Periods
Basic Math for Carpenters
Mathematical concepts and operations for the carpentry trade. Addition, subtraction, multiplication and division of whole, decimal, fractional and metric numbers. Linear, angular, circular, surface and volume measurements. Basic geometry. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SUN104   1 Credit   1 Period
Site Preparation I
Trade terms, local zoning and building ordinances, and plot plan layout. Installation of batter boards and establishing building lines. Set up and use of a builder's level. Prerequisites: (Registered apprentice status and SUN101) or permission of the apprenticeship coordinator.

SUN105   2 Credits   2 Periods
Reading Plans and Elevations
Construction drawings, lines, symbols, dimensions and abbreviations. Specifications and site and plot plan development. Includes plan and elevation reading exercises. Prerequisites: (Registered apprentice status and ABC123) or permission of the apprenticeship coordinator.

SUN108   1.5 Credits   1.5 Periods
Wall Systems, Tilt-Up
History and evolution of tilt-up construction processes. Tilt- up versus concrete block or poured in place concrete walls. Testing of concrete and preparation of the slab for tilt-up. Grading and finishing concrete slabs and forming tilt-up panels. Lifting and bracing panels. Prerequisites: (Registered apprentice status and SUN103) or permission of the apprenticeship coordinator.

SUN109   2 Credits   2 Periods
Site Preparation II
Basic field engineering including terminology, methods of land description and the use of tools and instruments. Government land survey system procedures and specific procedures for field surveying. Prerequisites: Registered apprentice status, SUN101, and SUN104, or permission of the apprenticeship coordinator.

SUN110   1.5 Credits   1.5 Periods
Forming
Concrete formwork including terminology, layout, materials and tolerances. Construction forms for columns, footings, walls, beams and stairs. Prerequisites: (Registered apprentice status and SUN101) or permission of the apprenticeship coordinator.

SUN110AA   1 Credit   1 Period
Forming (Loose) Fundamentals
Cushion cone and cam-lock forming system. Various form and scaffold bracket systems. Forming teams, snap ties, aluma gang forms. Lumber versus Laminated Veneer Lumber (LVL) strongbacks. Prerequisites: Registered apprentice status or permission of the Apprenticeship Coordinator.

SUN111   1 Credit   1 Period
Introduction to Light Equipment
Use, operation and maintenance of light equipment used in the construction trades. Types, assemblies, operator qualifications, controls, safety precautions, operating procedures, and maintenance of aerial lifts, skid steer loaders, trenchers, generators, compressors, compactors and forklifts. Prerequisites: None.

SUN112   1 Credit   1 Period
Framing Fundamentals
Wall and ceiling layout procedures. Assembly and erection of exterior walls using common materials and methods. Masonry construction wall framing techniques and use of metal studs. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SUN201   1.5 Credits   1.5 Periods
Reinforcing Concrete
Use of reinforced concrete and reinforcing steel. Reinforced concrete in specific settings. Reinforcing steel; bar supports, bar lists, fabrication options, cutting and bending, tying, splicing and placing bars. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

SUN202   2 Credits   2 Periods
Horizontal and Vertical Formwork
Concrete forming and shoring systems and accessories, panel and gang wall patented wall forming systems. Column patented forms, flying form systems and culvert and roof support systems. Slipforming, paving and architectural forms. Application and construction methods for various types of forming and form hardware systems for walls, columns, and stairs as well as slip forms, climbing forms, and shaft forms. Overview of assembly, erection and stripping of gang forms. Prerequisites: (Registered apprentice status and SUN201) or permission of the apprenticeship coordinator.

SURGICAL TECHNOLOGY (SGT)

SGT103AA   1 Credit   2 Periods
Surgical Asepsis
Types of wounds and principles of healing. Techniques and principles of surgical asepsis. Regulatory agencies and their role. Operating room disinfection and clean up procedures. Correct surgical scrub technique and operating room preparation. Prerequisites: Admission to the Surgical Technology program or permission of instructor.

SGT103AB   1 Credit   2 Periods
Sterilization and Disinfection
Principles and techniques of sterilization and disinfection processes. Surgical instrument disinfection and preparation. Decontaminating procedures of surgical instruments. Methods of packaging and wrapping of surgical instruments. Prerequisites: Admission to the Surgical Technology or Hospital Central Service program or permission of instructor.

SGT104AA   **1 Credit**   **2 Periods**
Basic Surgical Instrumentation
Classification of surgical instruments. Common and proper names for instruments. Specific uses, handling, and care for surgical instruments. Prerequisites: None.

SGT104AB   **1 Credit**   **2 Periods**
Specialty Surgical Instruments
Identification, care, and use of specialty surgical instruments to include endoscopes, stapling guns, and other specialty equipment. Prerequisites: None.

SGT105   **1 Credit**   **2 Periods**
Surgical Technology Pre-Clinical
Direct observation of principles and culture of operating room. Traffic patterns, aseptic techniques, roles, professional surgical team work, instrument handling, safety precautions with regard to exposure, surgical attire, surgical regimen and chain of command. Prerequisites: None.

SGT110   **5 Credits**   **10 Periods**
Basic Surgical Procedures
Responsibilities of surgical technician in pre-operative, intra-operative, and post-operative periods. Needles, sutures, and syringes. Procedures for instrument count. Proper positioning, prepping, and dressing procedures. Demonstration of complete set-up and procedure for exploratory laprotomy. Prerequisites: Admission to the Surgical Technology program.

SGT115   **1 Credit**   **1 Period**
Operating Room Orientation
Roles and responsibilities of operating room personnel focusing on the surgical technician. Working conditions, job requirements, limitations, and legal responsibilities. Safety rules, hazards, and safeguards. Orientation to the operating room, instrument processing room, decontamination instrument room, and central supply. Assisting the surgical team in preparation and set up of equipment. Stocking rooms and transporting patients. Prerequisites: Admission to the Surgical Technology program.

SGT120   **2 Credits**   **10 Periods**
Operating Room Practicum I
Introduction to the physical environment of the operating room with selected experience in general surgery cases under direct supervision. Prerequisites: BIO162 and SGT110.

SGT208   **1 Credit**   **2 Periods**
Surgical Patient Care Concepts
Pre-operative procedures to include patient's charts and consent forms. Common diagnostic procedures prior to surgery. Operating room admission procedures and interview, charting, and checklist. Purpose of the post anesthesia care unit (PACU). Impact of specific chronic illnesses on body functions. Issues pertaining to death and dying. Special considerations for the pediatric and geriatric patient. Includes a clinical observation experience. Prerequisites: Admission to the Surgical Technology program.

SGT210   **5 Credits**   **9 Periods**
Advanced Surgical Procedures
Major body systems and anatomical structures with corresponding terms and abbreviations related to surgical technology. Advanced techniques for pre-operative, intra-operative and post-operative periods. Lasers and scopes. Application to surgical and specialized procedures including orthopedic, peripheral vascular, cardio-vascular, thoracic, neurosurgery, ophthalmic, plastic reconstructive with grafting. Prerequisites: SGT110 or permission of the department.

SGT217   **2 Credits**   **4 Periods**
Pharmacology for Surgical Technology
Role of surgical technologist in safe handling of drugs according to operating room policies and procedures. Uses and classification of drugs. Federal and state pharmacy regulations applicable to the surgical patient. Complications and safety issues during local, regional and general anesthesia administration. Prerequisites: Admission to Surgical Technology program or permission of instructor.

SGT220   **3 Credit**   **15 Periods**
Operating Room Practicum II
Reinforcement and broadening of knowledge and skills of the surgical technologist required for pre-operative, intra-operative and post-operative care of the patient having general surgery, including gastro-intestinal and/or endoscopic surgery. Prerequisites: BIO162, SGT110, SGT115, and SGT120.

SGT225   **3 Credits**   **15 Periods**
Operating Room Practicum III
Reinforcement and broadening of knowledge and skills of the surgical technologist required for pre-operative, intra-operative and post-operative care of the patient undergoing the following types of surgeries: thoracic, throat and neck, cardiovascular and/or peripheral vascular, orthopedic, neurologic, reconstructive and/or laser. Prerequisites: SGT110, SGT120, and SGT220.

SGT227   **3 Credits**   **15 Periods**
Operating Room Practicum IV
Reinforcement and broadening of knowledge and skills of the surgical technologist required for pre-operative, intra-operative and post-operative care of the patient undergoing the following types of surgeries: general, thoracic, vascular, ophthalmic, nuerologic, orthopedic, plastic/reconstructive, gynecologic, obstetric and/or genitourinary. Prerequisites: SGT110, SGT120, and SGT220.

SGT275   **3 Credits**   **5 Periods**
Certification Examinations Preparation
Preparation for the National Surgical Technology Certification Examination. Review of the content specifications, techniques for preparation and review of current literature determined by the Liaison Council on Certification for Surgical Technologists. Prerequisites: Qualified individuals preparing for the certification exam or permission of the department.

TOTAL QUALITY MANAGEMENT (TQM)

TQM101   3 Credits   3 Periods
Quality Customer Service
Examines the nature of quality customer service and the attitudes, knowledge, and skills needed to work effectively in a quality customer service environment. Foundation skills for quality customer service are taught, applied and practiced. Prerequisites: None.

TQM201   2 Credits   2 Periods
Total Quality Concepts
Examines the concepts of quality as they relate to service, products and the employee. Focuses on the history, rationale and basic principles of total quality. Recognizes the scope and requirements for a total quality development effort. Prerequisites: None.

TQM214   2 Credits   2 Periods
Principles of Process Improvement
Examines the concepts and tools of quality/continuous improvement. Includes mapping processes, statistical measurement, problem-solving tools and methods of presenting findings, evaluating, and implementing changes. Prerequisites: None. TQM201 is recommended.

TQM220   2 Credits   2 Periods
Leadership and Empowerment Strategies
Methods for facilitating teams and empowering employees which effectively enable all employees to act upon a shared vision. Prerequisites: None. TQM201 is recommended.

TQM230   2 Credits   2 Periods
Teamwork Dynamics
Theory and practice of how team members and team leaders use listening, negotiating and interpersonal skills for the enhancement of team process. Included are concepts of team development and team problem-solving techniques. Prerequisites: None. TQM201 is recommended.

TQM235   2 Credits   2 Periods
Motivation, Evaluation, and Recognition Systems
Presents methods for benchmarking, assessing team performance, linking recognition to team performance, and valuing victories and mistakes with all personnel. Prerequisites: None. TQM201 is recommended.

TQM240   3 Credits   3 Periods
Project Management in Quality Organizations
Presents methods for quality organizations in how to plan and schedule a project in use of Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) techniques and software to monitor and control projects. Prerequisites: None.

TQM290AA   1 Credit   1 Period
TQM Internship
Quality Process Leadership experience in an organizational setting. Eighty (80) hours of work and seminar activities. Prerequisites: TQM201, TQM214, TQM220, TQM230, TQM235, TQM240, or departmental approval.

TQM292   1 Credit   1 Period
Innovation Strategies
Identification of the attitudes, knowledge and skills needed to challenge the process and initiate change in an organization. Includes the analytical skill required for creativity as well as methods for innovative thinking. Prerequisites: TQM290AA or departmental approval.

TRADE RELATED (TDR)

TDR102   1 Credit   1 Period
Construction Soft Skills I: Workplace Skills
First impressions, relationship building, and team work. Diversity in the work place. Individual and group activities. Prerequisites: Registered apprentice status or permission of apprenticeship coordinator.

TDR104   1 Credit   1 Period
Construction Soft Skills II: Listening and Speaking
Effective listening, speaking, reading and writing skills for the construction industry. Communication process: channel, receiver and feedback. Communication issues, problems, and noise. Business and form writing for the construction industry. On-the-job site factors. Individual and group activities. Prerequisites: TDR102.

TDR106   1 Credit   1 Period
Construction Soft Skills III: Resolving Workplace Issues
Stress recognition and management. Time management. Critical thinking and problem solving. Conflict prevention and resolution. Annoying behavior. Coping skills. Criticism. Sexual harassment. Drug, alcohol, and substance abuse. Individual and group activities. Prerequisites: TDR104.

WATER RESOURCE TECHNOLOGY (WRT)

WRT100   3 Credits   3 Periods
Introduction to Water Resources
Fundamental principles of water resources. Basic concepts and strategies in the study of water, the current focus on water pollution and water purification. Topics include ground water, surface water, water quality, water purification, and water pollution. Presentation of ongoing studies related to work of earth scientists. Prerequisites: Permission of Department or Division.

WRT101   4 Credits   6 Periods
Introduction to Water Resources Field Experiences
Fundamental principles of water resources. Basic concepts and strategies in the study of water, the current focus on water pollution and water purification. Topics include ground water, surface water, water quality, water purification, and water pollution. Presentation of ongoing studies related to work of earth scientists. Hands-on experiences in the field. Prerequisites: Permission of Department or Division.

WRT103   3 Credits   3 Periods
Industrial Pretreatment
Principles of industrial pretreatment programs. Overview of industrial facilities inspections and pollution prevention strategies. Sampling techniques of industrial wastewaters. Field exercises to acquire industrial wastewater quality data and industrial discharge flow measurements. Quality assurance, quality control (QA/QC), and data processing

techniques included. Safety procedures stressed. Prerequisites: Permission of Department or Division.

WRT104AA   1 Credit   1 Period
Survey Of Water Technologies
Fundamental principles of water technologies. Basic concepts and strategies in water/wastewater treatment, distribution, collections and high purity water treatment. Need for water purification, water/wastewater treatment. Duties of Water/wastewater/collections/distributions operators and purification technicians. Prerequisites: None.

WRT106   3 Credits   3 Periods
Small Water System Operation and Maintenance
Overview of safe and effective operation and maintenance of small drinking water systems and treatment plants. Also covers wells, pumps, disinfection and setting water rates. Prerequisites: None.

WRT110   3 Credits   3 Periods
Principles of Water Treatment Plant Operations
Principles in the safe and effective operation and maintenance of drinking water treatment plants, reservoir management and intake structuring. The source of water, basic water laboratory test procedures and calculations also covered. Prerequisites: None.

WRT111   3 Credits   3 Period
Hydrologic Data
Types of hydrologic data, uses of data, sources of data, collection and processing of data. Topics include surface water, ground water, and water quality data. Actual data processing, uses, presentation, and publication. Prerequisites: Permission of Department or Division.

WRT112   1.5 Credits   1.5 Periods
Surface-Water Records Computation
Computation and analysis of surface-water records. Emphasis on physical interpretation of measured data as an aid in analyzing the surface-water record. Computer processing used. Prerequisites: None.

WRT114   3 Credits   3 Periods
Mineral Control
Operation and maintenance processes in the treatment for iron, manganese, hardness, trihalomethanes and minerals. The importance of fluoridating drinking water and water softening. Prerequisites: None.

WRT115   3 Credits   3 Periods
Water Technology Calculations
Application of water technology formulas for operation and maintenance of water/wastewater plants and distribution and collections systems. Includes operator examination preparation and discussion of best practices in water technologies given the results of the calculations. Prerequisites: MAT103AA and MAT103AB, or higher-level mathematics course.

WRT116   3 Credits   3 Periods
Water Treatment Plant Administration
Administration safety and maintenance of a water treatment plant. Handling and disposal of process wastes, instrumentation use, laboratory procedures, drinking water regulations. Prerequisites: WRT110 or permission of Department or Division.

WRT117   3 Credits   3 Periods
Geographic Information Systems (GIS)
Purpose and applications of desktop Geographic Information Systems (GIS) technology applied to water resources and planning. ArcView software program applications and data management. Includes data query and spatial data functions. Analysis of spatial relationships and presentation of spatial information. Prerequisites: BPC110 or permission of department.

WRT120   4 Credits   6 Periods
Hydrologic Instrumentation
Overview of operating hydrologic data gathering equipment used in surface water, groundwater and water quality sampling networks. Continuous monitoring records, electronics, data collection problems, and methods of installation of instruments. Safety stressed. Prerequisites: WRT100, or WRT101, or permission of Department or Division.

WRT121   3 Credits   3 Periods
Operation of Wastewater Treatment Plants
Safe and effective operation and maintenance of wastewater treatment plants. Overview of treatment processes and laboratory testing used in wastewater treatment plants. Principles and processes involved in waste treatment ponds, disinfection and chlorination process. Prerequisites: None.

WRT124   3 Credits   3 Periods
Sludge and Solids Handling
Exploration of conventional activated sludge plant operations including principles of activated sludge and sludge digestors used in wastewater treatment. Laboratory procedures and effluent disposal included. Prerequisites: None.

WRT125   4 Credits   6 Periods
Surveying For Water Resources
Fundamental surveying principles utilized in water field studies. Level and transit, horizontal measurement by tape or stadia. Benchmark and profile leveling traverse surveys and computations and establishment of line and grade. Field reconnaissance of water resources. Lab experiences in surveying techniques and procedures. Prerequisites or Corequisites: MAT103AA and MAT103AB, or higher-level mathematics course, or permission of Department or Division.

WRT126   3 Credits   3 Periods
Wastewater Plant Administration
Administrative responsibilities in operating a wastewater plant including safety and maintenance. Emphasis on laboratory procedures, reporting data in reports and graphs and recordkeeping. Prerequisites: WRT121 or permission of Department or Division.

WRT130   3 Credits   3 Periods
Groundwater Hydrology
Fundamentals of groundwater resources. Includes basic flow equations, well hydraulics, groundwater fluctuations, artificial recharge and basic-data collection techniques. Emphasis on the use of data in analysis of local and regional flow systems. Prerequisites: WRT100 or WRT101. Prerequisites or Corequisites: (MAT103AA and MAT103AB, or higher-level mathematics course) and WRT130LL, or permission of Department or Division.

WRT130LL   1 Credit   3 Periods
Groundwater Field Techniques
Field exercises to acquire groundwater data and service data-gathering equipment. Safety procedures stressed. Prerequisites or Corequisites: WRT130 or permission of department.

WRT131   3 Credits   3 Periods
Wastewater Collection System Operation and Maintenance
Overview of wastewater collection systems with an emphasis on inspection and cleaning of sewer systems. Safety considerations, maintenance and underground repair procedures also covered. Prerequisites: None.

WRT134   3 Credits   3 Periods
Water Distribution Systems Operation and Maintenance
Safe and effective operation and maintenance of water distribution systems. Water contaminants, disinfection and chlorination in addition to development of a plant safety plan. Prerequisites: None.

WRT140   3 Credits   3 Periods
Water Quality for Treatment Industry
Introduction to water quality including common parameters in the treatment industry, regulations, and types and methods of monitoring. Prerequisites: None.

WRT150   3 Credits   3 Periods
Introduction to Surface Water Data Collection
Fundamentals of surface water data collection while stressing safe practices. Map reading and navigation, field inspections, accessing, collecting, recording and retrieving surface water data. Prerequisites: None. Corequisites: WRT100, or WRT101, or permission of Department or Division.

WRT151   2 Credits   3 Periods
Introduction to Surface Water Data Collection Field Techniques
Hands-on experience in surface water data collection while stressing safe practices. Map reading and navigation, field inspections, accessing, collecting, and recording surface water data. Prerequisites: None. Corequisites: (WRT100 or WRT101) and WRT150, or permission of Department or Division.

WRT160   3 Credits   3 Periods
Pretreatment For Water Purification
Principles of pretreatment for water purification. Basic concepts of pre-treatment and maintenance procedures. Function and maintenance of specific types of filters. Function of heat exchanger. Advantages and disadvantages of chemical treatment of water. Case studies of field operations. Prerequisites: CHM130, CHM130LL, and WRT104.

WRT190AA   1 Credit   1 Period
Water Technologies Seminar Level 1
Interaction with other students and professionals in the water technologies industry. Stress placed on sharing knowledge and demonstrating understanding through discussion of current issues in the industry, operational tasks, and emerging issues. Prerequisites: None.

WRT203   3 Credits   3 Periods
Chemical and Biochemical Processes in Water/Wastewater Treatment
The chemical and biochemical processes used for the treatment of water and wastewater. Prerequisites: Permission of Department or Division.

WRT204   3 Credits   3 Periods
Water/Wastewater Maintenance/Mechanical Systems
Maintenance of facilities and equipment in both water and wastewater systems. Prerequisites: WRT110 and WRT121, or permission of Department or Division.

WRT205   3 Credits   3 Periods
Power and Instrumentation
Principles of basic electricity, electrical circuits, motors, transformers, and process control instrumentation. Prerequisites: None.

WRT206   1 Credit   3 Periods
Analytical Laboratory
Laboratory safety, sampling and reporting; wet analytical methods; sample analyses; process chemistry. Prerequisites: None. Corequisites: WRT140 or permission of Department or Division.

WRT210   3 Credits   3 Periods
Membrane Technologies
Fundamentals of reverse osmosis. Basic theory and function of membrane technologies, membrane design and use, element configuration, maintenance, and record keeping. Prerequisites: (WRT160, CHM130, and CHM130LL) and (MAT122 or equivalent), or permission of department.

WRT218   1 Credit   3 Periods
Troubleshooting Membrane Technologies
Troubleshooting reverse osmosis (RO) systems. Hands-on experiences with actual RO systems and membrane technologies. Maintenance, problem solving and cleaning procedures. Prerequisites or Corequisites: WRT/WWM210 or permission of Department or Division.

WRT230   3 Credits   3 Periods
Ion Exchange Technologies
Basic theory and function of de-ionization systems. Design, use, element configuration maintenance and record keeping of de-ionization systems. Prerequisites or Corequisites: WRT/WWM210 or permission of Department or Division.

WRT238   1 Credit   3 Periods
Troubleshooting Ion Exchange Technologies
Troubleshooting operational problems of an ion exchange system, in a hands-on environment. Calibration of ion exchange instruments. Methods of maintenance, problem solving and cleaning of ion exchange systems. Prerequisites or Corequisites: WRT/WWM230 or permission of Department or Division.

WRT240   3 Credits   3 Periods
Water Quality
Fundamental chemical and physical factors involved in evaluating water quality. Water quality deterioration from land fills, underground storage tanks, and hazardous waste. Sampling techniques of groundwater, soil, and surface water. Quality assurance, quality control, and data

processing techniques included. Prerequisites: (WRT100 or WRT101) and (CHM130 and CHM130LL) and (MAT103AA and MAT103AB, or higher-level mathematics course) or permission of Department or Division.

WRT240LL   1 Credit   3 Periods
Water Quality Field Techniques
Field exercises to acquire water quality data and service data gathering equipment. Safety procedures stressed. Prerequisites or Corequisites: WRT240 or permission of department.

WRT250   3 Credits   3 Periods
Surface Water Hydrology
Fundamentals of surface water, understanding of surface water features, and characteristics and parameters impacting surface water features. Conducting hydrologic modeling and on modeling itself. Prerequisites: (WRT117 and WRT150) and (MAT103AA and MAT103AB, or higher-level mathematics course), or permission of Department or Division.

WRT251   2 Credits   3 Periods
Surface Water Field Techniques
Field exercises to acquire surface water data and develop hydrologic models. Safety procedures stressed.   Prerequisites: WRT151. Corequisites: WRT250 or permission of Department or Division.

WRT260   4 Credits   6 Periods
Applied Hydrology: Groundwater, Surface Water and Water Quality
Theory and project-based experience in water resources technology. Data collection, data processing and data interpretation for groundwater, surface water and water quality studies. Using and servicing data gathering equipment. Safety procedures stressed. Prerequisites: (WRT120, WRT125, WRT130LL, WRT240LL, and WRT251) or permission of Department or Division.

WRT270AA   1 Credit   1 Period
Water Resources Internship
Water resources work experience in business, industry, or government. Eighty (80) hours of designated work per credit. Prerequisites: Departmental approval. WRT270AA may be repeated for credit for a total of three (3) credit hours.

WRT270AB   2 Credits   2 Periods
Water Resources Internship
Water resources work experience in business, industry, or government. Eighty (80) hours of designated work per credit. Prerequisites: Departmental approval. WRT270AB may be repeated for credit for a total of six (6) credit hours.

WRT270AC   3 Credits   3 Periods
Water Resources Internship
Water resources work experience in business, industry, or government. Eighty (80) hours of designated work per credit. Prerequisites: Departmental approval. WRT270AC may be repeated for credit for a total of six (6) credit hours.

WRT280AA   0.5 Credit   0.5 Period
Arizona Water Certification Review: Treatment Grades 1 & 2
Refresher course in preparation for state certification testing for the operation, supervision and administration of water treatment systems. Prerequisites: None.

WRT280AB   0.5 Credit   0.5 Period
Arizona Water Certification Review: Treatment Grades 3 & 4
Refresher course in preparation for state certification testing for the operation, supervision and administration of water treatment systems. Prerequisites: None.

WRT280AC   0.5 Credit   0.5 Period
Arizona Water Certification Review: Distribution Grades 1 & 2
Refresher course in preparation for state certification testing for the operation, supervision and administration of water distribution systems. Prerequisites: None.

WRT280AD   0.5 Credit   0.5 Period
Arizona Water Certification Review: Distribution Grades 3 & 4
Refresher course in preparation for state certification testing for the operation, supervision and administration of water distribution systems. Prerequisites: None.

WRT281AA   0.5 Credit   0.5 Period
Arizona Wastewater Certification Review: Wastewater Treatment Grades 1 & 2
Refresher course in preparation for state certification testing for the operation, supervision and administration of wastewater treatment systems. Prerequisites: None.

WRT281AB   0.5 Credit   0.5 Period
Arizona Wastewater Certification Review: Wastewater Treatment Grades 3 & 4
Refresher course in preparation for state certification testing for the operation, supervision and administration of wastewater treatment systems. Prerequisites: None.

WRT281AC   0.5 Credit   0.5 Period
Arizona Wastewater Certification Review: Collections Grades 1 & 2
Refresher course in preparation for state certification testing for the operation, supervision and administration of wastewater collection systems. Prerequisites: None.

WRT281AD   0.5 Credit   0.5 Period
Arizona Wastewater Certification Review: Collections Grades 3 & 4
Refresher course in preparation for state certification testing for the operation, supervision and administration of wastewater collection systems. Prerequisites: None.

WATER/WASTEWATER MANAGEMENT (WWM)

WWM210   3 Credits   3 Periods
Membrane Technologies
Fundamentals of reverse osmosis. Basic theory and function of membrane technologies, membrane design and use, element configuration, maintenance, and record keeping. Prerequisites: (WRT160, CHM130, and CHM130LL) and (MAT122 or equivalent), or permission of Department or Division.

WWM218   1 Credit   3 Periods
Troubleshooting Membrane Technologies
Troubleshooting reverse osmosis (RO) systems. Hands-on experiences with actual RO systems and membrane technologies. Maintenance, problem solving and cleaning procedures. Prerequisites or Corequisites: WRT/WWM210 or permission of Department or Division.

WWM230   3 Credits   3 Periods
Ion Exchange Technologies
Basic theory and function of de-ionization systems. Design, use, element configuration maintenance and record keeping of de-ionization systems. Prerequisites or Corequisites: WRT/WWM210 or permission of Department or Division.

WWM238   1 Credit   3 Periods
Troubleshooting Ion Exchange Technologies
Troubleshooting operational problems of an ion exchange system, in a hands-on environment. Calibration of ion exchange instruments. Methods of maintenance, problem solving and cleaning of ion exchange systems. Prerequisites or Corequisites: WRT/WWM230 or permission of Department or Division.

WWM271   4 Credits   6 Periods
Industrial Wastewater Treatment for Biotechnology
Principles of wastewater treatment for biotechnology. Overview of industrial facilities inspections and pollution prevention strategies. Sampling techniques of industrial wastewaters. Quality assurance, quality control (QA/QC), and data processing techniques included. Safety procedures stressed. Prerequisites: Completion of Associate in Applied Science in Water Technologies degree or completion of Associate in Applied Science in Air Conditioning/Refrigeration/Facilities degree.

WELDING TECHNOLOGY (WLD)

WLD100   2 Credits   2 Periods
Basic Welding
Shop procedures, safety and personal protection. Grinders, drill presses, and saws. Resistance and oxyacetylene welders. Arc welders: alternating current (AC) and direct current (DC) modes, electrodes, positioning and securing. Prerequisites: Registered apprentice status or permission of the apprenticeship coordinator.

WLD101   3 Credits   6 Periods
Welding I
Principles and techniques of electric arc and oxyacetylene welding and cutting. Provides technical theory and basic skill training in these welding processes. Prerequisites: None.

WLD201   3 Credits   6 Periods
Welding II
Further study of electric arc and oxyacetylene welding with emphasis on GTAW (heliarc) and GMAW (mig) processes to weld both ferrous and nonferrous metal. Prerequisites: WLD101.

WLD202   3 Credits   5 Periods
Construction Welding III
Metal arc welding processes, blueprint and weld symbol reading, joint layout preparation and welding procedures, gas-tungsten arc welding with related instruction in practice on ferrous and nonferrous metals. Prerequisites: Permission of instructor.

WLD214   2 Credits   2 Periods
American Welding Society Certification Preparation
Principles and techniques of electric arc welding and American Welding Society (AWS) certification requirements, certification pretest and preparation. Technical theory and skill training in all position welding processes. Prerequisites: (WLD101 and registered apprenticeship status) or permission of the apprenticeship coordinator.

WLD215AA   2 Credits   2 Periods
Weld Fabrication I for Millwrighting
Layout, fabrication and basic skills of measuring, cutting, shaping, grinding, drilling and tapping, welding, filing, shimming, heating and bending of metal parts. Safe and proper use of all necessary hand and power tools. Prerequisites: (WLD214 and registered apprenticeship status) or permission of the apprenticeship coordinator.

WLD215AB   2 Credits   2 Periods
Weld Fabrication II for Millwrighting
Welding layout and fabrication. Advanced skills in measuring, cutting, shaping, grinding, drilling and tapping, welding, filing, shimming, heating and bending of metal parts. Safe and proper use of all necessary hand and power tools. Prerequisites: (WLD215AA and registered apprenticeship status) or permission of the apprenticeship coordinator.

WELLNESS EDUCATION (WED)

WED100   2 Credits   2 Periods
Personal Wellness
Overview of wellness and its relationship to personal health. Understanding of personal wellness through lifestyle assessments. Introduction to wellness and health-related topics including fitness, relationships, nutrition, self care, abusive behaviors, mind/body connection, and other current issues in health. Prerequisites: None.

WED110   3 Credits   3 Periods
Principles of Physical Fitness and Wellness
Stress basic, lifetime health and skill-related components of fitness to achieve total wellness. Topics include nutrition, weight control, exercise and aging, cardiovascular and cancer risk reduction, stress management, prevention of sexually transmitted diseases, substance abuse control, and overall management of personal health and lifestyle habits to achieve the highest potential for well-being. Prerequisites: None.

WED144   **3 Credits**   **5 Periods**
Strategies in Diabetes Management
Introduction to strategies in diabetes mellitus management and prevention for individuals diagnosed with diabetes and their caretakers. Includes a physical activity component. Prerequisites: None.

WED162   **1 Credit**   **1 Period**
Meditation and Wellness
Physiology of meditation and its effects on physical and mental health; scholastic abilities and interpersonal relationships; differentiation between meditation and other relaxation techniques. Prerequisites: None.

WOMEN'S STUDIES (WST)
WST100   **3 Credits**   **3 Periods**
Introduction to Women's and Gender Studies
Introduction to critical issues in women's studies. Prerequisites: None.

Enrollment Services

The Department of Enrollment Services at GateWay Community College strives to provide effective and reliable service in support of the academic mission of this institution. Enrollment Services staff facilitates and supports student admission, enrollment, retention, and graduation.

Location: SO1170-South Building, with advisors also located in
            Center for Health Careers Education (CHCE)
Telephone: 602.286.8200
Website: **www.gatewaycc.edu**
Email: enroll@gatewaycc.edu

Fall and Spring Semester Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Friday   8:00 a.m. - 5:00 p.m.
Summer Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Closed Fridays

GateWay Central

GateWay Central is designed to serve the needs of students by providing a one-stop service center for admissions, registration, records, financial aid, cashiering, and advisement. GateWay Central assists with a variety of registration and enrollment services and provides computer access for self-serve and on-site assistance.

Student ID Cards

Student identification cards are available at GateWay Central. A picture ID is required before a student ID is issued. The first ID is free; replacement cost is $5.00. The following is the policy for obtaining an official GateWay student ID:
- Student ID's will only be issued two weeks prior to the start of the semester in which the student is registered.
- Payment of tuition/fees or proof of Financial Aid/deferment is required before issuance of student ID.

My.maricopa.edu

My.maricopa.edu provides access for students, faculty and staff into the course management systems, the student self-serve functions for all Maricopa Community Colleges, and the GoogleApps for email. Through the Student Center, students can register for classes, print class schedules, make a payment, view grades, request transcripts, update contact and address information, and apply for graduation.

Admissions, Registration and Records

The Admissions, Registration and Records department performs the following functions: processing the Student Information Form (admission); determining residency for tuition payment purposes; registering students in classes; maintaining student records; processing transcript requests and enrollment verifications, and administering selective admissions. This office is also responsible for monitoring FERPA, complying with parts of the Solomon Amendment, and verifying citizenship and residency for tuition purposes. In addition, this office processes all transcript evaluations, graduation reviews and checkouts.

Advising

Academic Advising provides students with guidance in identifying and developing suitable programs of study, encourages persistence, and helps identify and assess alternatives and consequences of those decisions by helping students:
- Understand the college environment
- Clarify educational and career goals
- Develop educational plans
- Interpret individual assessment information
- Explain college requirements
- Select appropriate courses
- Increase student awareness of educational resources available
- Develop decision-making skills
- Transfer to or from another institution

Assessment/Testing Center

The Assessment/Testing Center staff administers English, Reading, and Mathematical assessment placement tests, CELSA (English as a second language), GED, HESI A2, HESI PN, credit by exam for health curriculum courses, and individual student make-up exams (per instructor request).

Veteran Services

Veteran Services provides the Veteran student and eligible dependents with information concerning current G.I. Bill benefits. A Veteran Affairs certifying official will assist the student in applying for their educational benefits. Veteran Services works closely with the state, regional, and national Veteran Administration offices to assure that valid information is current. Students must make a formal request from this office each semester to be certified to use their benefits.

Financial Aid

Financial assistance is available to eligible GateWay Community College students in the form of grants, scholarships, employment, tuition payment plans or federal loans. Students may receive assistance from only one funding source, or aid may be offered in a package from multiple sources. The student award depends on eligibility, level of need, packaging policy, and availability of funds.

Under federal regulations, students have the primary responsibility for funding their education. For dependent students, their parents share that responsibility. All dependent student awards are based on "need" after consideration of student and parental contribution. Refer to the Free Application for Federal Student Aid (FAFSA) for the federal definition of dependency.

Eligibility

Students must meet ALL of the following requirements to be eligible for federal student aid: US citizen or eligible non-citizen; enrolled as a regular student in an eligible program; making satisfactory academic progress; have a high school diploma, GED or demonstrate ability to benefit through an independent testing process; apply by completing the Free Application for Federal Student Aid (FAFSA), using the student's legal name and valid Social Security Number; show financial "need" per federal regulation; be registered with Selective Service, if required to do so; not concurrently enrolled in high school; not be in default on any Title IV student loan or owe repayment on any Title IV student grant; not be convicted of certain drug trafficking or possession laws; must provide all documentation requested; and must use any funds received for educational purposes only.

Some programs of study and continuing education classes offered by GateWay Community College are not eligible for federal student aid. An eligible program of study leads to a certificate or degree after successful completion of at least 16 credit hours, with instruction provided over a minimum of 15 weeks.

Enrolling in some classes could limit the amount of funding or the types of assistance available. Attending less than 12 credit hours in a semester will normally reduce the amount of the award. Students should refer to their academic transcripts to see under which semester a particular class will be funded.

Students are required to be enrolled and attending credit hours equal with their level of award before financial aid funds (Title IV) can be disbursed. Staggered start dates, including programs of study having classes that start later in the semester, will be subject to delayed disbursement until appropriate number of credit hours has started, per beginning date on file with the Admissions, Registration and Records Office. If level of enrollment is reduced after financial aid has been disbursed, award must be recalculated and the student may owe a repayment.

How to Apply
Students are encouraged to apply early. Priority consideration for limited financial aid funds may be given to those completing the application process in full prior to April 1. Continuing students must reapply for each academic year. Students enrolling for the first time during spring or summer should apply as early as possible prior to the beginning of the semester they plan to attend.

Students requesting financial assistance may begin the application process by completing the Free Application for Federal Student Aid (FAFSA). To expedite processing, designate GateWay Community College (code 008303) in step six. The paper FAFSA form can be obtained at any library. Students are encouraged to apply electronically at **http://www.fafsa.ed.gov.** Student Financial Assistance will be happy to provide assistance with the application process.

After submitting the FAFSA to the processor, students will receive a Student Aid Report (SAR). If the code (008303) for GateWay Community College was entered on the FAFSA, we will also receive the results electronically.

GateWay Community College will notify students via email if additional documents are required to complete the application before a determination of eligibility can be made. It is, therefore, important that the student keep Enrollment Services apprised of the student's current email and mailing addresses. Aid application may be denied if mail is returned due to a bad address. Student financial aid applications cannot be reviewed until all requested documents have been received. Review of documents originally submitted sometimes triggers the need for additional information, which in turn could require further documentation or clarification. Therefore, it is important to apply early.

Grants
Grants are funds that do not have to be repaid, as long as the student finishes the classes for which the grant was received. Students who withdraw or cease to attend may have to repay all or some of the grant.

Federal Pell Grant
Eligibility for Pell Grant must be determined first. Pell awards are based on need, with amounts dependent on congressional appropriations and cost of attendance. Enrollment status (full-time, three-quarter-time, half-time or less than half-time) also affects the amount of the Pell award.

Federal Supplemental Educational Opportunity Grants (FSEOG)
FSEOG awards are subject to fund availability, student need, packaging policy, and enrollment status. Per federal regulation, priority is given to students who have exceptional financial need, and who are also eligible for Pell. Award amounts may vary according to fund availability, student need, packaging policy, and enrollment status.

Leveraging Educational Assistance Partnership (LEAP)
LEAP recipients must be Arizona state residents enrolled at least half-time. Award amounts also vary according to fund availability, student need, packaging policy, and enrollment status.

Scholarships
Scholarships generally do not require repayment. Scholarships come from a variety of sources and are awarded based on criteria specific to a particular scholarship. By federal regulation, scholarships must be considered as a resource in determining eligibility for federal student aid. Receipt of a scholarship could cause a reduction in federal funds already awarded. Students are responsible to report any scholarships received.

Students are encouraged to apply for any and all scholarships for which they meet qualifications. Scholarships are posted at **http://www.gatewaycc.edu/Pay/Scholarships/**. New scholarships become available throughout the year, so students should monitor this site on a regular basis. GateWay Community College does not recommend any agency that charges a fee to provide scholarship leads. Free scholarship information and searches are also available at this site.

Employment
Students who need employment in order to maintain enrollment at GateWay Community College may be offered part-time employment on campus, with work hours structured around the student's class schedule.

Federal Work-Study (FWS)
FWS awards are based on fund availability, student need, and enrollment status. There is no guarantee that students will be placed, or that they will earn the entire amount of their awards.

Budget Employment
Some departments on campus may have institutional funds to hire student employees.

Loans
Since loans always require repayment, students are encouraged to take a loan only after exploring all other funding possibilities. Awarding is subject to student eligibility, including program of study and existing debt level, as well as subject to terms of default management plan. All student borrowers are required to attend an entrance counseling session as well as an exit interview to ensure full understanding of rights and responsibilities associated with a student loan.

Federal Perkins Loans

Eligibility for this loan program depends on fund availability, student need, enrollment status, and prior student debt. Priority is given to students with exceptional need. First-time borrowers have a nine (9) month grace period. The interest rate is 5%.

FFEL Stafford Loan Program

GateWay will no longer be offering the FFEL loan after the 2009-2010 academic year.

Direct Loan Program

Direct Loans are low-interest loans for students and parents to help pay for the cost of a student's education after high school. The lender is the U.S. Department of Education (the Department) rather than a bank or other financial institution. With the Direct Loan eligible students borrow directly from the federal government and have a single contact, the Direct Loan Servicing Center for everything related to the repayment of their loans. Additionally, the student will have online access to their Direct Loan account information at www.dl.ed.gov. The interest rate is variable, but will never exceed 8.25%. Eligible students who meet the federal definition of "need" may receive subsidized loans, whereby the federal government pays interest on the loan until the student enters repayment following a six (6) month grace period. Students who are otherwise eligible, but do not qualify for the interest subsidy, would be immediately responsible for the interest from the moment the loan is disbursed until it is paid in full.

Short-term Loans and Tuition Installment (Payment Plan)

GateWay Community College offers an online payment option called "eCASHIER" to help the student meet their educational expenses. Students who choose to use eCASHIER may select installment plans that are spread over several months, depending on the length of the semester. Contact the Cashier's Office for additional information at (602) 286-8277.

Financial Aid Refund/Repayment Information

Students are affected by this policy if completely withdrawn from all credits before completing 60% of the semester, and they have received federal financial aid (referred to as Title IV funds) for that same period. Aid may be recalculated and any adjusted award can be found at My.maricopa.edu under the student's account. Calculation examples are available from the school's Office of Student Financial Assistance. Students are referred to the Maricopa Community Colleges' withdrawal policy concerning procedures for withdrawal.

I.   **Definitions**
A.   Calculations are based upon the percentage of aid earned. For students who officially withdraw from school, the percentage of aid earned is based upon the number of days completed during the semester. For students who unofficially withdraw from school, the mid-point of the semester is used for calculation purposes.
B.   Amount of aid earned by the student is determined by taking the aid disbursed (plus aid that could have been disbursed) and multiplying by the percentage of aid earned.
C.   Amount of Title IV aid to be returned is the difference between the total aid disbursed and the amount of aid earned by the student.
D.   Amount of unearned Title IV aid due from the school is calculated by taking the total institutional costs multiplied by the percentage of unearned Title IV aid. If loan funds were included in the disbursement, unearned Title IV aid due from the school would first be returned to the loan program(s).
E.   Amount of unearned Title IV aid due from the student is calculated by taking the previously calculated Title IV aid to be returned and subtracting the amount of unearned aid returned by the school. Title IV loans are reimbursed first. Since loan repayment is subject to the terms of the promissory note, the student is not required to make immediate repayment. The school will bill the student for amounts requiring immediate repayment. Student may pay in full or make satisfactory repayment arrangements. Failure by the student to repay or make satisfactory repayment arrangements will result in the reporting of the debt to the U.S. Department of Education and the student will be ineligible for further Title IV assistance.

II. **Funds must be returned to the source(s) from which they were paid.**
A.   School return of funds must be distributed in the following order:
1.   Unsubsidized Stafford Loan
2.   Subsidized Stafford Loan
3.   Federal Perkins Loan
4.   PLUS Loan
5.   Federal Pell Grant
6.   Federal Supplemental Educational Opportunity Grant (FSEOG)
7.   Other Title IV programs
B.   Student return of funds must be distributed in the following order:
1.   Unsubsidized Stafford Loan*
2.   Subsidized Stafford Loan*
3.   Federal Perkins Loan*
4.   PLUS Loan*
5.   Federal Pell Grant
6.   Federal Supplemental Educational Opportunity Grant (FSEOG)
7.   Other Title IV programs
Loan amounts are returned in accordance with the terms of the promissory note.

Maricopa Community Colleges Standards of Satisfactory Academic Progress (SAP)

Financial Aid Eligibility Federal regulations (CFR 668.32(f) and 668.34) require a student to move toward the completion of a degree or certificate within an eligible program when receiving financial aid. Specific requirements for academic progress for financial aid recipients are applied differently than Scholastic Standards. Federal regulations state that Academic Progress Standards must include a review of all periods of enrollment, regardless of whether or not aid was received. Students will be evaluated using the standards described below. Failure to meet any of these minimum standards will result in loss of title IV, HEA program (federal financial aid) eligibility.

Evaluation Period

Standards of Satisfactory Academic Progress (SAP) will be evaluated at the end of each semester; fall, spring and summer. Programs less than one year in length will be evaluated at the midpoint of the program. Non-standard sessions will be evaluated at the completion of the session. Credits evaluated will include credits attempted at the evaluating school and courses funded through consortium agreement.

Standards of Satisfactory Academic Progress

Standards of Satisfactory Academic Progress (SAP) are evaluated on each of the three measurements outlined below. Failure to meet any of these standards will result in suspension of eligibility for financial aid.

Note: Grades of F,I,N,W,X,Y,Z, and courses not yet graded are considered attempted but not meeting progress standards for the purposes of financial aid.

Grade Point Measurement

Students must meet the following credit hour/cumulative grade point average (CGPA).

Total Credits Attempted*	Minimum CGPA
< 15.75	1.60
16-30.75	1.75
31-45.75	1.90
46 +	2.00

for which grade points are computed

Semester Progress Measurement

Students must successfully complete 2/3 of all attempted course work during the semester.

Maximum Timeframe Eligibility

Students who have attempted more than 150% of the credits required for their program of study are not considered to be making Satisfactory Academic Progress and therefore, are ineligible for financial aid funds. All evaluated transfer credits will be included when determining maximum timeframe eligibility. A student with a Bachelor's degree or higher will be considered to have exhausted maximum timeframe eligibility.

Ineligibility Determination Appeal

Any student who has lost financial aid eligibility due to extenuating circumstances may appeal. Appeals must:

- Be in writing and submitted to the Financial Aid Office where the student is applying for aid.
- Include the extenuating circumstances that caused the student not to meet SAP standards.
- Include appropriate supporting documentation.
- Include how that condition or situation has been resolved thus allowing the student the ability to meet SAP standards.
- Include "unofficial" academic transcripts from every educational institution the student attended prior to attending GateWay.

Students will be notified of the results of their appeal and any restrictions or conditions pertaining to their appeal. The outcome of an appeal may include a probationary term or denial.

Failure to successfully complete all conditions during the probationary period (as defined in the academic plan) will result in loss of financial aid eligibility.

Regaining Eligibility

A student who has lost financial aid eligibility may only regain eligibility by meeting the minimum SAP standards. Course work taken at other colleges will not be considered for reinstatement purposes.

For more information, please contact the Office of Student Financial Assistance.

Athletics

Location:	MA1133-Main Building, Room 1133
Telephone:	(602) 286-8142
Website:	**http://athletics.gatewaycc.edu**

Fall and Spring Semester Hours:
Monday - Friday	8:00 a.m. - 5:00 p.m.

Summer Hours:
Monday – Thursday	7:00 a.m. - 6:00 p.m.
Closed Fridays	

The Athletic Department provides student-athletes the guidance and resources to pursue their academic and athletic goals. Through the support and direction of their coaches, student-athletes are encouraged to excel in both the classroom and on their respective playing fields. Combining academics and athletics provides student-athletes the opportunity to participate in athletics beyond high school.

Additionally, student-athletes will be given the opportunity to develop leadership and life skills, improve their athletic performance, and in most cases, supplement funding of their college education. GateWay offers the following intercollegiate athletic programs: men's cross country, women's cross country, men's soccer, women's soccer, men's golf, women's golf, baseball, and softball.

Bookstore

Location:	MA1200 - Main Building, Room 1200
Telephone:	(602) 286-8400
Website:	**http://www.efollett.com or http://students.gatewaycc. edu/**

Fall and Spring Semester Hours
Monday - Thursday	8:00 a.m. - 7:00 p.m.
Friday	8:00 a.m. - 2:00 p.m.

Summer Hours
Monday - Thursday	8:00 a.m. - 5:00 p.m.
Closed Fridays	

Career & Employment Services Center/ The Center for Workforce Transition

Location:	MA1152 - Main Building, Room 1152
Telephone:	(602) 286-8500
Fax:	(602) 286-8151
Website:	**http://students.gatewaycc.edu/Resources/ CareerPlanning/default.htm**

Fall and Spring Semester Hours
Monday - Thursday	8:00 a.m. - 6:00 p.m.
Friday	8:00 a.m. - 4:00 p.m.

Summer Hours
Monday - Thursday	8:00 a.m. - 6:00 p.m.
Closed Fridays	

Career & Employment Services

The Career & Employment Services Center is open to students, alumni, and community jobseekers who are deciding on a career, looking for

work, or both. The Career & Employment Services Center offers individualized assistance in the following areas:
•   Career planning and assessment
•   Determination of a major
•   Resume development
•   Interview preparation
•   Job search resources

Employment Resources

For students and community jobseekers that need assistance in obtaining part-time or full-time employment, a variety of job resources and services are available. Job resources include a multitude of Internet-based job boards including the MCCCD Maricopa Career Network, as well as traditional job postings. Other job search services are resume critiques, practice interviews, faxing resumes and applications, Internet access. Other services include:
•   On-campus employer recruitment and job fairs
•   Workshops on Job Searching, Resume Writing, Interviewing, and Employability Skills
•   Employer information files

All students are encouraged to drop by Career & Employment Services Center to take advantage of these services.

The Center for Workforce Transition

The Center serves the workforce needs of both employers and mature workers, providing new opportunities for both. The Center for Workforce Transition will:
•   Address the greatest labor needs in the areas of healthcare, education, and social services
•   Survey the needs of employers
•   Assess the skills, knowledge, and interest of boomers
•   Provide various training opportunities
•   Match skill sets with job or work assignments that are both paid and unpaid

Cashier's Office

Location: SO1107 - South Building, Room 1107
Telephone: (602) 286-8277
Website: **http://www.gatewaycc.edu/Pay/**

Fall and Spring Semester Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Friday   8:00 a.m. - 5:00 p.m.
Summer Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Closed Fridays

The Cashier's Office manages collection of tuition and other fees owed to the college. Tuition and fees must be paid or payment arrangements made by the due date to secure classes. There may be different due dates for registration fees and for tuition and class fees.

Payments must be received in the Cashier Office on or before the due date. If you are mailing your payment, please allow sufficient time for the payment to be received by the due date.

Payments can be made in the Bursar/Cashier Office during office hours

Methods of Payment

Cash - U.S. currency

Checks - Personal checks, cashier's checks, money orders, and Travelers Checks made payable to GWC only and for the correct amount for tuition and fees. The Bookstore is a separate company and will require a separate payment; DO NOT combine payments. Overpayments are subject to the refund process.

Credit Cards - Visa, MasterCard, Discover, and American Express - Available online through your student center. Payment can be made by calling the Cashier's Office at (602) 286-8277 or by calling the phone-in registration line at (602) 286-8100.

Payment Plans - Available online through Nelnet; transactions are made from checking or savings accounts, or major credit cards.

Third Party Billing - For use by organizations and agencies that have made arrangements with the District Office for billing. The required "letter of intent" may be brought, mailed or faxed to the Cashier's Office and must contain the students name, student ID number, and the dollar amount to be paid.

Out Of Country Affidavits - For qualifying students, the required paperwork may be brought or mailed to the Cashier's Office, but are only credited to the students account after the student's portion is paid.

Returned Checks

A fee of $15 will be charged for each returned check.

Payment Due Dates

In accordance with the Arizona Community College Board adopted Tuition and Fees Schedule, all tuition, fees, assessments, and deposits must be paid in full at the time of registration and/or by the due date indicated on your on-line student account accessible via **my.maricopa.edu**. No student is properly enrolled unless he/she has completed this requirement.

If you are receiving some form of financial assistance, it is your responsibility to have your tuition and fees paid by your due date to prevent being dropped for non-payment of tuition of fees.

Children's Learning Center

Location: Children's Learning Center
Telephone: (602) 286-8130
Website: **http://students.gatewaycc.edu/**

Spring and Fall Semester Hours
Monday - Friday   6:30 a.m. - 6:00 p.m.
Summer Hours
Monday - Friday   6:30 a.m. - 6:00 p.m.

We are a state licensed, DES authorized facility. Enrollment is on a first-come, first served basis.

Ages of Children

Children two (2) years through twelve (2) years are accepted for enrollment. All children must be able to take care of their own toileting needs.

Requirements
- Current Immunization Records
- Birth Certificate
- Completed Enrollment Forms
- Parent's Class Schedule

Children are accepted on a drop-in basis. To insure that space is available you MUST call first to make reservations. Above requirements must be met.

Fees
There is a $15 non-refundable registration fee due at the time of registration, for each child, each semester (maximum of $30 per family). The hourly fees are:

Students	Enrolled in the center for
40 + hours	$2.25/hour
30 – 39 hours	$2.50/hour
20- 29 hours	$2.75/hour
Less than 20 hours	$3.00/hour

Drop in rate of $ 3.50/hour

Staff	Enrolled in the center for
40 + hours	$3.25/hour
30 – 39 hours	$3.50/hour
20 – 29 hours	$3.75/hour
Less than 20 hours	$4.00/hour

Drop in rate of $ 4.50/hour. Must call first to ensure space.

Computer Commons

Location:	Main Building - MA2122
Telephone:	(602) 286-8576
Website:	**http://www.gatewaycc.edu/Academic/ComputerCommons/**

Fall and Spring Semester Hours
Monday - Thursday   7:30 a.m. - 8:00 p.m.
Friday   7:30 a.m. - 4:00 p.m.
Summer Hours
Monday - Thursday   7:30 a.m. - 7:00 p.m.
Closed Fridays

The Computer Commons provides computer access for GateWay Community College students. Student ID is required. Listed below are some of the services offered by the Computer Commons.

Open Computer Use
Computer Commons is equipped with Microsoft Office software including Word, Excel, Access and PowerPoint. All computers are connected to the Internet. Printers are also available.

Computer-Based Learning
Educational software that facilitates learning in various subject areas is available for student use in the Computer Commons.

Located within the Computer Commons is the Institute for Computer Training (ICT). Through the ICT, online and self-paced classes are available. Faculty are available during designated hours.

Copy/Mail Center

Location:	MA1210-Main Building, Room 1210
Telephone:	(602) 286-8313

Fall and Spring Semester Hours
Monday - Thursday   7:00 a.m. - 7:00 p.m.
Friday   7:00 a.m. - 5:00 p.m.
Summer Hours
Monday - Thursday   7:00 a.m. - 6:00 p.m.
Closed Fridays

Fee-based student services include: black and white and color copying, binding, laminating, transparencies, and other specialty work upon request. Please stop by the Copy/Mail Center or call for current price information. The Copy Center accepts cash only.

Counseling & Adult Re-Entry Department

Location:	SO1160 - South Building, Room 1160
Telephone:	(602) 286-8900
Website:	**http://students.gatewaycc.edu/**

Fall and Spring Semester Hours
Monday - Thursday   8:30 a.m. - 6:00 p.m.
Friday   8:30 a.m. - 3:00 p.m.
Summer Hours
Monday - Thursday   10:00 a.m. - 6:00 p.m.
Closed Fridays

The mission of the Counseling & Adult Re-entry Department is to address students' personal, academic, and career needs that impact the learning process. Counselors are committed to serving the GateWay community with responsive educational and counseling services in order to improve student retention, academic success and quality of life.

Students can also access services which include academic advising, educational planning, career/personal counseling, and career/personal assessment tools. Counseling can also link students with resources both on and off campus to help students reach their potential. Furthermore, Counseling and Personal Development [CPD] courses are offered each semester with a variety of specific themes designed to help students develop effective life skills. Course descriptions for Counseling and Personal Development (CPD) classes are listed in the class schedule and GateWay Catalog and Student Handbook.

We also offer an adult re-entry program that incorporates career exploration and computer training through our EMPOWER Program.

Disability Resources & Services

Location: South Building (SO)
Telephone: (602) 286-8170
Website: **http://students.gatewaycc.edu**

Fall and Spring Semester Hours
Monday - Thursday   7:00 a.m. - 6:00 p.m.
Closed Fridays
Summer Hours
Monday - Thursday   7:00 a.m. - 6:00 p.m.
Closed Fridays

The Disability Resources & Services Office works on a case-by-case basis on the provision of reasonable accommodations for students with disabilities whom have documentation.

Food Service/Gecko Cafe

Location: Main Building (MA)
Telephone: (602) 286-8308
Website: **http://students.gatewaycc.edu/**

Fall and Spring Semester Hours
Monday - Thursday   7:00 a.m. - 7:30 p.m.
Friday   7:00 a.m. - 2:00 p.m.
Summer Hours
Monday - Thursday   7:00 a.m. - 2:00 p.m.
Closed Fridays

A variety of menu items and beverages are available at reasonable prices. Breakfast items include: eggs, bacon, ham, toast, bagels, donuts, etc. Lunch and dinner items include: burgers, fries, soup, sandwiches, desserts, salads and daily entrees.

Honors Program

The Honors Program encourages students to pursue enhanced opportunities for scholarship, leadership, and service. Students may complete honors courses and conduct independent research with faculty mentors in diverse fields of study. The GateWay Honors program also participates in the MCCCD Honors Lecture Series, which invites visiting lecturers to meet with students and address collective biennial themes. Each honors course is designated honors under "notes" on the student's official college transcript, indicating students' commitment to prospective employers and admissions offices at other post-secondary institutions. Honors students enjoy:
• Honors sections of regular classes
• Individualized instruction through special projects
• Faculty mentors
• Tuition scholarships and waivers
• Cultural and social activities
• Special recognition on transcripts and diplomas

Students with grade point averages of 3.25 or better on a 4.0=A scale (based on at least 12 credit hours of MCCCD coursework at the 100 level and above), or students in the top 15% of their graduating high school classes, are invited to apply for the Honors Program. Those admitted to the program qualify for Tuition Awards of up to $325 or become eligible to apply for enhanced scholarships for honors students

in good standing. For full details, consult Honors Faculty Directors Ferdinand Hunter, (602) 286-8732, hunter@gatewaycc.edu and Lauren Yena, (602) 286-8731, yena@gatewaycc.edu.

Institute for Computer Training

Location: Room MA2122 - Main Building, Room 2122
Telephone: (602) 286-8568
Website: **http: // www.gatewaycc.edu/Academic/Online/**

Fall and Spring Semester Hours
Monday - Thursday   7:30 a.m. - 8:00 p.m.
Friday   7:30 a.m. - 4:00 p.m.
Summer Hours
Monday - Thursday   7:30 a.m. - 8:00 p.m.
Closed Fridays
Instructor Hours
Monday & Wednesday   9:00 a.m. - 1:00 p.m.
Tuesday & Thursday   11:00 a.m. - 3:00 p.m.
Tuesday - Thursday   4:00 p.m. - 8:00 p.m.
Testing Hours
Monday & Wednesday   9:00 a.m. - 11:30 a.m.
Tuesday & Thursday   11:00 a.m. - 1:30 p.m.
Tuesday – Thursday   4:00 p.m. - 7:00 p.m.

The Institute for Computer Training: (**http://ictonline.gatewaycc.edu**) Offers classes in computer technology and computer literacy through the Internet and in the Computer Commons found in room MA2122. Classes are offered in both Online and in Lab self-paced formats.

Registered students at GateWay Community College wishing to use the computer lab for course related assignments must have a valid GateWay Community College Student ID Card. and appropriate basic knowledge and skills to use/navigate MS Office, Internet, and e-mail.

The use of the computers and the Internet must be in support of the college's classes and consistent with the educational objectives of the college. Students are expected to conform to all terms and conditions of the GateWay Student Handbook and the MCCCD Technology Resource Standards (**http://www.maricopa.edu/legal/it/trs.htm**).

Contact instructors and lab managers in Room MA2122 for further information.

Java City

Location: Center for Health Careers Education (CH)
Telephone: (602) 286-8309

Fall and Spring Semester Hours
Monday - Thursday   7:00 a.m. - 8:00 p.m.
Fridays   8:00 a.m. - 1:00 p.m.
Saturday   7:00 a.m. - 1:00 p.m.

A variety of hot and cold coffee and tea beverages. Food items include bagels, grab-and-go sandwiches and salads, scones, danishes, and cookies.

Learning Center

Locations: Learning Center-Main Building, Room MA1240
              Center for Health Careers Education, CHCE Lab,
              CH2121
Telephone: (602) 286-8800
Website: **http://www.gatewaycc.edu/Academic/LearningCenter/**

Fall and Spring Semester Hours
Monday - Thursday   7:30 a.m. - 7:00 p.m.
Friday   7:30 a.m. - 4:00 p.m.
Saturday   8:00 a.m. - 1:00 p.m.
Summer Hours
Monday - Thursday   7:30 a.m. - 6:00 p.m.
Closed Fridays

CHCE 2121 Computer Lab Hours
Monday - Thursday   9:00 a.m. - 3:00 p.m.
Closed Fridays
CHCE 2121 Summer Hours
Monday - Thursday   8:30 a.m. - 3:00 p.m.
Closed Fridays

The Learning Center provides free academic support services for GateWay Community College students and faculty. Listed below are some of the services offered by the Learning Center.

Tutoring

Tutoring is available for currently enrolled GateWay Community College students by appointment, on a one-to-one basis or in small groups. Drop-in tutoring for math, chemistry, biology, and writing are also available during designated hours. Tutoring is available for, but not limited to, the following:
• Accounting
• Anatomy and Physiology
• Biology
• Chemistry
• Cisco
• English/Writing
• ESL
• Health Sciences
• Industrial Technology
• Math
• Nursing
• Physics
• Psychology
• Reading
• Spanish

Learning and Study Strategies

Tutoring and instructional materials are available to assist students in the development and refinement of effective strategies for:
• Memory improvement
• Note-taking
• Test taking
• Textbook reading
• Time management
• Vocabulary

Computer-Based Learning

Educational software that facilitates learning in various subject areas is available for student use in the Learning Center. This includes textbook-based software, supplemental software, and other e-learning resources.

Open Computer Use

Computer labs and laptop computers are available for student use. They are equipped with Microsoft Office software including Word, Excel, Access and PowerPoint. All computers are connected to the Internet.

Learning Tools

The following learning tools learning materials are available for student use in the Learning Center:
• Video tapes
• DVDs
• Supplemental books
• Anatomical models
• Microscopes & slides

Library Resource Center

Location: MA1370 - Main Building, Room 1370
Telephone: Circulation: (602) 286-8454
              Reference: (602) 286-8458
Website: **http://ww.gatewaycc.edu/library**

Fall and Spring Semester Hours
Monday - Thursday   8:00 a.m. - 8:00 p.m.
Friday   8:00 a.m. - 4:00 p.m.
Saturday   9:00 a.m. - 12:00 p.m.
Summer Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Closed Fridays

The GateWay Library supports the College's educational programs and culturally diverse community by providing responsive service and accessible resources in a learner-centered environment. Get the research help you need to succeed.

In-Person Services

• Reference and research assistance
• Check-out services, including account set-up
• Course Reserves
• Computer access
• Wireless Internet access (Login required)
• Group and individual learning spaces & video viewing facilities

Online Services (Available 24/7)

• "Ask a Librarian" chat reference service
• Web-based Catalog of books, videos, and more
• Full-text databases of magazines, journals, newspapers, encyclopedias, and images*
• Full-text eBook collections*
• Streaming Media collections*
• Interlibrary & Intradistrict Loan service*

Access to these services from off-campus requires a current library account. Login with MEID & Library PIN (last 4 digits of phone number).

Living Accommodations

GateWay Community College does not provide dormitory accommodations. The Center for Student Life has provided an information board of various housing locations. For further assistance, contact the Center for Student Life at (602) 286-8700.

Public Safety/Parking

Location: College Safety Building
Telephone: (602) 286-8911
Website: **http://students.gatewaycc.edu/**

Department Hours

Security staff is on-site 24 hours a day, seven days a week.
Office Hours for parking permits and other requests:
Monday - Friday   6:30 a.m. - 10:00 p.m.
Saturday   6:30 a.m. - 4:00 p.m.

General Information

The GateWay Public Safety Department (PSD) is located in the Public Safety Building which is in operation 24 hours a day, seven days a week. The telephone number is (602) 286-8911. Students may utilize the on-campus extension number 6-8911.

The primary role of the department is to provide assistance and protection of people on campus and the protection of district and personal property.

Reporting Crimes and Emergencies

Students, faculty and staff are encouraged to report all criminal activity and emergencies that occur on campus. A report may be filed through a Public Safety officer. In case of emergency, individuals may utilize (602) 286-8911 or 9-1-1 if exceptional circumstances exist. Reports of a non-emergency nature may be reported via the phone or made in person at the Public Safety Office.

Student Responsibility in Crime Prevention

The cooperation and personal support of students is crucial to the success of safety and security programs with regard to the campus community. Students must assume some responsibility for their own safety and the security of their personal property. By taking common sense precautions and adopting an awareness of their surroundings and environment, students can greatly reduce the probability of becoming a victim of a crime. To assist the student in becoming better informed, the Public Safety Department provides the following information:

1. Certain types of crimes may pose an on-going threat to the campus community. Whenever such crimes occur, the campus community is informed in a timely basis through the "Crime Log." This report provides information on criminal activity that has occurred on campus. Notification of an immediate threat may be disseminated through text messaging and email through the use of the emergency notification system commonly referred to as RAVE Notification.
2. Public Safety publishes an annual report identifying the types of crime that have occurred on campus during the fiscal year. The type of crime reported is defined by the FBI in the Uniform Crime Reporting System. The report is prepared annually and is available on the GateWay web site at **students.gatewaycc.edu**.

Emergency Evacuations

Whenever the evacuation alarm or fire alarm sounds or you are verbally informed to evacuate:

1. Remain calm. Do not call the Public Safety Department to ascertain if the alarm is false or not. The phone lines will be needed to contact assisting agencies.
2. Leave the building, following the evacuation route posted in your area or classroom in an orderly manner.
3. While leaving:
   a. Assist disabled persons or others requiring assistance.
   b. Shut all doors behind you as you go. Closed doors tend to slow the spread of fire, smoke and water.
   c. Proceed quickly, but in an orderly manner. Hold onto handrails while on the stairway.
   d. Do not use elevators.
4. Follow the instructions of instructors and staff.
5. Once outside, proceed to the designated assembly area. Follow the instructions of emergency personnel at the scene.

Areas of Refuge

Areas of Refuge for disabled persons are located in the following areas:
- In the Main Building, second floor in the vicinity of Room MA2305.
- In the Main Building, southeast side of the building in the vicinity of MA2113.
- In the Center of Health Career Education, west of Room 2153 in the north wing.
- In the Center of Health Career Education on the opposite side of Room 2035 in the south wing.

During evacuations, disabled persons should be assisted to these locations for evacuation by Public Safety, police or fire personnel.

Safety Escorts

A safety escort is available to students, faculty and staff who wish to be accompanied to any location on campus. Students may request an escort in person at the Public Safety Building or by calling (602) 286-8911 (ext. 6-8911). A Public Safety officer will accompany you to your on-campus destination.

Lost and Found Property

The Public Safety Department maintains a lost and found section. Students who lose property on campus may check with Public Safety to determine if an item has been found. Found items brought to the Public Safety Department will be held for 30 days. Items not claimed within this period of time will be disposed of in accordance to established procedures.

Parking Permits

All vehicles that are parked on the college campus must be registered with the Public Safety Department. A parking permit is required for each registered vehicle used by a student. Parking permits are issued at no charge to students. The issued parking permit is valid for five years and should be placed on the lower left front windshield (driver's side). On motorized cycles, the permit shall be affixed where it can be seen without difficulty on the front fender.

A state issued handicapped license plate or disabled parking permit is required for parking in designated handicapped parking spaces.

As of January 1, 1989, all out-of-state and out-of-county students must sign an affidavit at the time of registration indicating that their vehicle is in compliance with emissions inspections guidelines.

Carpool Parking

Carpool parking spaces are located at various locations on campus. Students and employees who wish to use carpool parking spaces must register and obtain a permit from the Public Safety Department. The permit must be displayed when parked in carpool parking spaces. The permit is valid for 6 months. There is no charge for a carpool parking permit.

Assistance with Disabled Motor Vehicles

Reasonable attempts will be made to assist persons who lock their keys inside of their vehicles or are experiencing vehicle problems, such as a dead battery, flat tire or similar issue.

Persons experiencing such problems should proceed to the Public Safety Department. A valid driver's license, proof of vehicle ownership and a college vehicle parking permit are required to receive vehicle assistance. Those individuals receiving assistance for entering their vehicle or a battery boost will also be required to sign a waiver form in the event that damage occurs as a result of the attempted assistance.

Vehicle Traffic and Parking Regulations Traffic

- All Arizona state laws governing the movement and operation of motor vehicles have been adopted by the MCCCD Governing Board for control of vehicles on college property.
- The maximum speed limit in all college parking lots is 15 mph.
- Driving motor vehicles, motorized cycles, and bicycles on pedestrian paths and sidewalks is prohibited.
- All accidents involving vehicles which occur on college property must be reported to the Public Safety Department.

Parking

- Vehicles parked in a parking space which displays a disabled parking sign, a painted disabled insignia, or both, must display a current disabled parking permit issued by the state of Arizona.
- Red curbs are no-parking zones. Parking in Red zones, entrances to buildings, driveways, in front of garbage dumpsters, barricades, fire lanes and fire hydrants is prohibited.
- Driving into or parking in an area not designated for use or closed by the use of barricades, chains, or other vehicle control devices is prohibited.
- Parking on or blocking pedestrian paths, sidewalks, crosswalks, striped safety zones, and bicycle paths are prohibited.
- Vehicles which bear a valid college parking permit may not park in spaces designated for visitor parking.

Students who violate the Traffic and Parking Regulations may be fined and/or disciplined in accordance to the guidelines established by the MCCCD Governing Board. Examples of the scheduled fines:

- Displaying an altered or substituted permit $50.00
- Failure to register a vehicle and display a parking permit $30.00
- Parking in a Fire Lane $50.00
- Violating disabled parking stall or access $50.00
- Parking by a college employee or student in a visitor area $15.00
- Parking in an undesignated, restricted, or unauthorized off-pavement area $15.00
- Parking in an unauthorized parking area $25.00
- Removing barricade or failure to obey vehicle control device $25.00

Weapons

The possession or use of firearms or other dangerous weapons is strictly forbidden on campus. All weapons, regardless of type, are prohibited by the MCCCD and/or state and local law. In accordance with state law and MCCCD policy, weapons may be left in a vehicle provided the weapon is out of sight and the vehicle is secured.

Smoking

GateWay Community College, as part of Maricopa Community Colleges, prohibits smoking in all enclosed college buildings. Smoking is permitted in designated areas only.

Designated smoking areas have been strategically placed throughout the campus for the use of smokers. Please utilize the designated locations when smoking.

Questions?

If you need more information about safety at GateWay Community College, please contact the Public Safety Department at (602) 286-8911. Public Safety personnel will address your questions and concerns in a prompt and courteous manner.

Student Activities/Services, Center for Student Life/Leadership

Location: MA1132-Main Building, Room 1132
Telephone: (602) 286-8700
Website: **http://students.gatewaycc.edu/**

Fall and Spring Semester Hours
Monday - Thursday   8:00 a.m. - 6:00 p.m.
Friday   8:00 a.m. - 4:00 p.m.
Summer Hours
Monday - Thursday   7:00 a.m. - 7:00 p.m.
Closed Fridays

The GateWay Community College Center for Student Life/Leadership makes the educational program a rich, exciting, and enjoyable experience. The office is designed to provide a full schedule of traditional and special events, student leadership workshops, cultural programs, student organization activities, publications, volunteer program, and a variety of free services. The office is designed for all students at GateWay Community College.

One of the prime responsibilities of the Center for Student Life/Leadership is to develop, implement and evaluate educational, cultural and social programs which reflect the needs of a diverse student population; it teaches and trains students to implement and evaluate the same. The Center also challenges awareness and encourages students to experience another dimension of student life based on responsibility and commitment.

Associated Students

Every student who is taking a class and has paid the registration fee is a member of the Associated Students of GateWay Community College (ASGWCC).

Associated Student Council (ASC)

The Associated Student Council (ASC) serves as a communication link between students and the administration, voicing concerns and ideas relative to student success. The ASC is the governing body of the Associated Students of GateWay Community College (ASGWCC). The purposes of this organization include, but are not limited to the following:

• To increase student involvement in all appropriate facets of college operations
• To enhance communication and cooperation among all segments of the college community
• To promote other activities which enhance the academic, social, and cultural growth of students

InterClub Council Membership: The membership of the InterClub Council will include the ASC Executive council and one student representative from each college-recognized student organization.

Special Events/Activities

Throughout the year at GateWay Community College, the Center for Student Life/Leadership provides special events and activities for the students. Those activities and events include but are not limited to: GateWay Introduces Volunteer Excellence (G.I.V.E.) volunteer projects, multicultural celebrations, Discovery Series, Commencement, and the Honors and Awards Banquet.

The events the Associated Student Council plans for the students are: Welcome Back Activities, Spring Gecko Land, and Holiday Buffet.

Student Representatives on College Committees

Student representatives serve on various campus committees which include the following: Graduation Committee, Honors and Awards Committee, Financial Aid Committee, Strategic Planning Committee, GateWay Community College Tribunal, Service-Learning Committee, and GateWay Community College Cultural Diversity Committee. Students are appointed to serve on each committee by the chairperson. Students are asked for input in matters of student affairs, publications, admissions, marketing and public relations, and retention of current students.

Student Organizations

There are many student organizations that are available at GateWay and are associated with a particular career field. GateWay also has several cultural clubs available for those interested students. GWCC student organizations are as follows:

• ACE Club
• Associated Student Council (ASC)
• Associated Students in Surgical Technology (ASSIST)
• Association of Respiratory Care Students (ARCS)
• Black Student Union
• Chess Club
• Club INSITE - Inspiring and Nurturing Students in Total Education
• Club Nuc Med
• Future Teachers Club
• GateWay's Women's Forum
• Gecko Toastmasters
• Gecko's In Action
• GWCC SkillsUSA

• Hispanic Student Organization (HSO)
• IMPACT - Campus Crusade for Christ
• InterClub Council
• Inter-Tribal Club
• Parents Learning About Youth (P.L.A.Y.)
• Phi Theta Kappa - Alpha Alpha Epsilon Chapter
• Safety Club
• Student Association of Radiologic Technologists (StART)
• Student Association of Sonographers (SAS)
• Student Nurses Association (SNA)
• Students with the Ability to Learn Succeed and Achieve (SALSA)
• Veterans Club
• Water and Various Environmental Sciences Association (WAVES)
• World Explorers Club

Chartered student organizations are a vital part of the educational opportunities offered by GateWay Community College. Through these organizations, students may participate in programs that enhance their occupational training or social activities that reflect special interests including cultural heritage events, community service projects, and forums dealing with today's issues.

Advisors to Student Organizations

Every GWCC student organization MUST have an advisor. In order to conduct official business, advisors MUST attend all meetings.

Student Leadership Programs

In the Center for Student Life/Leadership, leadership programs are provided throughout the year. There is a retreat held in the summer for all new officers and the department staff. During the fall semester a student organizational workshop is held in which all officers and advisors are urged to attend; a district wide Student Leadership Retreat is provided for all MCCCD student leaders. During the academic year, regional, national, and local student leadership conferences, seminars and workshops are available to keep the student leaders abreast of new programs, services and changes.

Posting Policy

In an effort to preserve our walls and the beauty of our buildings, the following posting regulations are in effect:
1. Posting is limited to the inside of the buildings.
2. Posting on all walls is strictly prohibited.
3. Post information on bulletin boards only.
4. All posted information must bear the name of the sponsoring organization and display the Student Activities stamp. You may have your information stamped in the Center for Student Life, located in Room MA1132 of the Main Building.

When posting materials, keep the following in mind:
1. Use thumb tacks; no staples please.
2. Do not post your material over someone else's information.
3. Do not remove or discard any information other than your own.

The Center for Student Life/Leadership will remove all posted bulletin board information after two weeks of display or the day following the date of the scheduled event. Please adhere to the information above or your material will be removed and taken to the Center for Student Life.

Student Policies and Procedures

Discrimination Complaint Procedure for Students

This procedure provides a means for resolving complaints by students who believe they have been adversely affected by illegal or prohibited discrimination by the Maricopa County Community College District (MCCCD), a member college or center, or their students or employees.

Complaints may be brought under this procedure for discrimination based on race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status, or genetic information. The entire college community should act promptly upon receipt of an allegation of conduct that might constitute discrimination. Any member of the college community should refer a person who might be a victim of such conduct to these procedures, as well as to the college officials responsible for conducting an investigation pursuant to these procedures.

Students who believe they are experiencing sexual harassment may utilize the Report process (as described below) in addition to the Informal and Formal Resolution processes.

All deadlines prescribed for Report, Informal Resolution and Formal Resolution processes may be extended by the Vice President of Student Affairs for good reason, such as (but not limited to) when classes are not in session or upon mutual agreement by the parties. Notwithstanding any deadline extension, college officials should take all necessary steps to ensure prompt and equitable resolution of any complaint of discrimination.

Information related to MCCCD's Discrimination Complaint Procedure for Students is also available from the Office of General Counsel at (480) 731-8876.

Informal Resolution of Discrimination Complaints

Before filing a formal complaint under this procedure, a student may attempt to resolve the problem through informal discussions with the person claimed to have engaged in discriminatory conduct and that person's supervisor or department head. The student may choose to ask the Vice President of Student Affairs to assist in the informal resolution process. The Vice President of Student Affairs may designate an employee to provide such assistance. The Vice President of Student Affairs may modify or reject an informal resolution of a complaint of discriminatory conduct under this process if, in the judgment of the Vice President, the resolution that is proposed is not in the best interests of both the student and the institution. The Vice President shall take such action no later than fifteen (15) calendar days after receiving notice of the informal resolution.

Attempts to informally resolve alleged discrimination should occur within ninety (90) calendar days of the most recent alleged discriminatory act. The college official responsible for this informal resolution process should ensure that the process is concluded promptly. For complaints dealing with alleged discrimination beyond the 90-day timeframe, a student must submit a written complaint under the formal resolution procedure of this policy.

If the complaint cannot be informally resolved to the satisfaction of the complainant, the complainant has the right to file a written complaint within 300 days of the most recent alleged discriminatory act and to proceed under formal resolution procedures.

Formal Resolution of Discrimination Complaints

A student who contends that unlawful or MCCCD-prohibited discrimination has occurred may file a formal complaint by contacting the Vice President of Student Affairs at each respective college or center. The Vice President of Student Affairs will accept complaint filings within 300 calendar days of the most recent occurrence of the alleged discriminatory act.

A complaint must be signed by the student and filed on the form prescribed by the Office of General Counsel. A student may also contact the Office of General Counsel to obtain the name and phone number of the college or center official designated to respond to discrimination complaints.

The complaint must identify the action, decision, conduct, or other basis that constituted an alleged act or practice of unlawful or MCCCD-prohibited discrimination. The complaint must also allege that the action, decision, or occurrence was taken or based on the complainant's race, color, religion, gender, sexual orientation, national origin, citizenship status, age, disability, veteran status, or genetic information, or any other unlawful discriminatory grounds.

Upon receipt of a complaint, the Vice President of Student Affairs will notify the college president or provost and the Office of General Counsel. The Office of General Counsel will assign a case number to the complaint.

A copy of the complaint will be shared with the respondent within five (5) working days of receipt by the Vice President of Student Affairs. Respondent will be put on notice that retaliation against the complainant or potential witnesses will not be tolerated and that an investigation will be conducted. Respondent must provide a written response to the complaint within fifteen (15) calendar days of his or her receipt of the complaint.

After accepting a complaint, the Vice President of Student Affairs will designate a complaint investigator to conduct a fact-finding investigation, which will include, at a minimum, a review of written evidence (including the complaint and response), and interviews with appropriate employees and students. The Vice President of Student Affairs may serve as complaint investigator. The complaint investigator shall promptly complete the investigation and deliver to the Vice President of Student Affairs the investigator's written findings and the results of the investigation, including summaries of all interviews and all documents received as part of the investigation. In no event shall this occur later than ninety (90) calendar days following receipt of the complaint. Within ten (10) working days following receipt of the results of the investigation from the complaint investigator, the Vice President of Student Affairs will submit to the President or Provost the investigator's written findings and the Vice President's recommendations as to the disposition of the complaint.

The President or Provost will accept, reject, or modify the recommendations and will provide a written notification of his or her action to the complainant and respondent within fifteen (15) calendar days of receiving the written findings and recommendations from the Vice President of Student Affairs.

When the investigation confirms the allegations, appropriate corrective action will be taken. Evidence which is collateral to the allegations of discrimination and/or sexual harassment and which was obtained during an investigation may be used in subsequent grievance or disciplinary procedures.

MCCCD Administrative Review Process
Request for Reconsideration
A complainant or respondent who is not satisfied with the decision of the President or Provost has ten (10) working days to request, in writing, administrative review of the decision by his or her college President or Provost. The request for administrative review must state specific reasons why the complainant or respondent believes the finding was improper. The president or provost will review the results of the investigation and written findings and respond to the request within ten (10) working days from receipt of the request. If the President or Provost determines that the decision is not supported by the evidence, the case file will be reopened and assigned for further investigation. If the President or Provost determines that the investigation was thorough and complete and that the decision is supported by the evidence, he or she will deny the request for administrative review. At this point, the complainant has exhausted the Internal Discrimination Complaint Procedure.

Complaint Process
Faculty, staff and all other college officials should refer any student seeking to make a complaint of discrimination to the Vice President of Student Affairs. Every student complaint of discrimination shall be investigated under the authority of the Vice President of Student Affairs in accordance with these Procedures. The Vice President of Student Affairs and any complaint investigator who participates in a complaint resolution pursuant to these Procedures shall administer every resolution process in an impartial manner, and shall fully consider all facts discovered in the course of any investigation before a resolution is reached. Each party in any complaint resolution shall have full opportunity to present all information and documentation the party feels is germane to the complaint. At no time shall a student who has made an allegation of discrimination under these procedures be asked or required in any way by a college official to engage in any direct confrontation with any person alleged to have committed an act of discrimination. The Vice President shall ensure that every effort is made to obtain information from each witness to every act of alleged discrimination or from any other person possessed of information that is relevant and material to the complaint resolution. The Vice President of Student Affairs shall ensure that all appropriate corrective action that is warranted as a result of any complaint resolution will be taken, and shall employ best efforts to ensure that the college prevents recurrence of discrimination in the future.

Maintenance of Documentation
Documentation resulting from each level in the Formal Resolution Process (including witness statements, investigative notes, etc.) will be forwarded to and maintained by the Office of General Counsel. Investigative records are not to be maintained with or considered as a part of a student record. Documentation regarding corrective action is considered part of the student's record.

Right to Assistance
A complainant or respondent may receive the assistance of an attorney or other person at any stage of a complaint filed under this Internal Discrimination Complaint Procedure. Such person may attend any investigative interview and advise the complainant or respondent but shall not otherwise participate in the interview. The complaint investigator shall direct communications directly to the complainant and respondent, and not through such individual's attorney or other person providing assistance.

Confidentiality of Proceedings
Every effort will be made by the college and MCCCD to protect the confidentiality of the parties during the processing of complaints under this procedure. Records will be maintained in a confidential manner to the extent permitted by law and insofar as they do not interfere with MCCCD's legal obligation to investigate and resolve issues of discrimination.

Retaliation Prohibited
Retaliation against a person who has filed a complaint or against any witness questioned during an investigation is strictly prohibited. Any retaliatory action by instructors, supervisors, managers, academic professionals, administrators, or other employees who have the authority to take adverse action against a complainant or witness is prohibited and may be grounds for disciplinary action.

False Statements Prohibited
Any individual who knowingly provides false information pursuant to filing a discrimination charge or during the investigation of a discrimination charge will be subject to appropriate discipline.

Filing a Report of Sexual Harassment
A student who believes that he or she is, or has been, the victim of sexual harassment as prohibited by MCCCD policy may Report (either orally or in writing) the harassment to the Vice President of Student Affairs at each college or center. The Report should be made within 180 calendar days of the most recent alleged incident of sexual harassment.

Upon receipt of the Report, the Vice President of Student Affairs or designee will have a meeting with the alleged harasser. The meeting shall include: identifying the behavior as described in the Report, alerting the alleged harasser to the perception of the impact of his or her behavior, providing the individual with a copy of the MCCCD Sexual Harassment Policy, encouraging completion of the Office of General Counsel's Sexual Harassment Online Tutorial, and encouraging greater awareness of behaviors that may lead to perceptions of sexual harassment. Neither the Report nor the meeting with the alleged harasser shall in any way constitute a finding of sexual harassment. The name of the complainant shall not be identified to the respondent during the Report process; however, complainants should be aware that they may be called as witnesses in subsequent disciplinary or due process proceedings, as well as in litigation. The meeting with the alleged harasser must be conducted within ten (10) working days of receipt of the Report.

External Filing of Discrimination Complaint
MCCCD encourages students to use the MCCCD Discrimination Complaint Procedure for students to resolve discrimination concerns. Students also have the right to file civil rights complaints with appropriate external agencies. No retaliation will be taken against a person for filing

a complaint with an external agency. The following agency accepts discrimination charges filed by, or on behalf of, students:

Office for Civil Rights, Region VIII (OCR)
Denver Office, U.S. Department of Education, Federal Building
1244 Speer Boulevard, Suite 310
Denver, Colorado 80204-3582
Phone: (303) 844-5695
Fax: (303) 844-4303
TDD: (303) 844-3417
E-mail: **OCR_Denver@ed.gov**

College Environment
Sexual Harassment Policy (AR 5.1.8)

The policy of the Maricopa County Community College District (MCCCD) is to provide an educational, employment, and business environment free of unwelcome sexual advances, requests for sexual favors, and other verbal and/or physical conduct or communications constituting sexual harassment as defined and otherwise prohibited by state and federal law.

Sexual harassment by and between, employees; students; employees and students; and campus visitors and students or employees, is prohibited by this policy.

Violations of this policy may result in disciplinary action up to and including termination for employees; sanctions up to and including suspension or expulsion for students; and appropriate sanctions against campus visitors.

This policy is subject to constitutionally protected speech rights and principles of academic freedom. Questions about this policy may be directed to the MCCCD EEO/Affirmative Action Office.

Examples of Policy Violations (AR 5.1.9)

It shall be a violation of MCCCD's Sexual Harassment Policy for any employee, student or campus visitor to:

A. Make unwelcome sexual advances to another employee, student or campus visitor;
B. Make unwelcome requests for sexual favors, whether or not accompanied by promises or threats with regard to the employment or academic relationship;
C. Engage in verbal or physical conduct of a sexual nature with another employee, student or campus visitor, that may threaten or insinuate, either explicitly or implicitly, that the individual's submission to, or rejection of, the sexual advances will in any way:
    1. Influence any personnel decision regarding that person's employment, evaluation, wages, advancement, assigned duties, shifts or any other condition of employment or career development; or
    2. Influence his or her grades, participation in or access to academic programs, class standing or other educational opportunities;
D. Engage in verbal or physical conduct of a sexual nature that:
    1. Has the purpose or effect of substantially interfering with an employee's ability to do his or her job; or with a student's ability to learn or participate in a class; or
    2. Which creates an intimidating, hostile or offensive work or academic environment;
E. Commit any act of sexual assault or public sexual indecency against any employee or student whether on MCCCD property or in connection with any MCCCD-sponsored activity;
F. Continue to express sexual interest in another employee, student or campus visitor after being informed or on notice that the interest is unwelcome (reciprocal attraction is not considered sexual harassment);
G. Engage in other sexually harassing conduct in the workplace or academic environment, whether physical or verbal, including, but not limited to, commentary about an individual's body (or body parts), sexually degrading words to describe an individual, sexually offensive comments, sexually suggestive language or jokes, innuendoes, and sexually suggestive objects, books, magazines, computer software, photographs, cartoons or pictures.

Additional Policy Violations (AR 5.1.10)

Supervisors, managers, administrators and faculty who disregard or fail to report allegations of sexual harassment (whether reported by the person who is the subject of the sexual harassment or a witness) are in violation of this policy.

Responsibility for Policy Enforcement (AR 5.1.11)

Every MCCCD employee and student must avoid offensive or inappropriate sexual and/or sexually harassing behavior at work or in the academic environment.

Employees and students are encouraged (but not required) to inform perceived offenders of this policy that the commentary/conduct is offensive and unwelcome.

Complaints (AR 5.1.12)

A. **Employees**
    Employees who experience sexual harassment at work (by a supervisor, co-employee, student or visitor) are urged to report such conduct to the direct attention of their supervisor, their college president or to the Maricopa Community Colleges Equal Employment Opportunity/Affirmative Action Office. If the complaint involves the employee's supervisor or someone in the direct line of supervision, or if the employee for any reason is uncomfortable in dealing with his or her immediate supervisor, the employee may go directly to the Maricopa Community Colleges EEO/AA Office.

B. **Students**
    Students who experience sexual harassment in the academic environment (by a faculty member, administrator, campus visitor or other student) are urged to report such conduct to the vice president of student affairs or designee at each individual campus. A student may also contact the MCCCD EEO/AA Office to obtain the name and phone number of the college official designated to respond to sexual harassment complaints.

C. **General - Applicable to Both Employees and Students**
    Complaints will be investigated according to procedures established by the MCCCD EEO/AA Office. Copies of these procedures may be obtained in the college president's office, Office of the Vice President of Student Affairs and the MCCCD EEO/AA Office. The college/center/MCCCD will investigate all complaints as professionally and expeditiously as possible. Where investigation confirms the allegations, appropriate responsive action will be taken by the college/center/MCCCD. The MCCCD EEO/AA Office phone number is (480) 731-8885.

Confidentiality (AR 5.1.13)

Records will be maintained in a confidential manner to the extent permitted by law and insofar as they do not interfere with MCCCD's legal obligation to investigate and resolve issues of sexual harassment.

Violations of Law (AR 5.1.14)

An employee or student may be accountable for sexual harassment under applicable local, state, and/or federal law, as well as under MCCCD policy. Disciplinary action by MCCCD may proceed while criminal proceedings are pending and will not be subject to challenge on the grounds that criminal charges involving the same incident have been dismissed or reduced.

False Statements Prohibited (AR 5.1.15)

Any individual who knowingly provides false information pursuant to filing a discrimination charge or during the investigation of a discrimination charge will be subject to appropriate disciplinary action, up to and including, employment termination or academic dismissal.

Retaliation Prohibited (AR 5.1.16)

Retaliation against an employee or student for filing a sexual harassment complaint, or participating in the investigation of a complaint, is strictly prohibited. MCCCD will take appropriate disciplinary action, up to and including employment termination or academic dismissal if retaliation occurs.

Petition Signature Solicitation (AR 2.4.8)

A. This regulation shall govern access to college premises by representatives who wish to solicit signatures on petitions for the purpose of submission of a ballot proposition to voters, or nomination of a candidate for elective office, in a city-, county, or state-wide election.

B. Each college president shall designate general hours of accessibility for solicitation and a location on college premises where all representatives on behalf of any candidate or ballot proposition may solicit signatures. The location shall be in a common area where the solicitation will not serve as an obstruction to student activities or otherwise disrupt the college environment.

C. All solicitation must take place in designated areas. Standard space may include one or two tables and chairs. Campus restrictions regarding amplification will apply. Representatives may not distribute or make available to students, employees, or college visitors any tangible item, except for informational literature about the proposed candidate or ballot initiative.

D. Representatives shall notify the designated official at each college or center of their intent to be present on college premises no fewer than three working days prior to soliciting signatures. Upon obtaining authorization, representatives shall be provided a written version of this regulation.

Solicitation (AR 2.4.9)

A. **Definitions**

A "solicitor" is any non-MCCCD-affiliated entity that would, on the premises of any Maricopa Community College or Center, purport to sell or promote any product, service, or idea, but does not include such an entity that would enter the premises for the purposes of promoting, opposing, or soliciting petition signatures in connection with any political candidate or initiative, or referendum ballot.

A "special event" is a college-sponsored event conducted on college premises for the benefit of students that is based on a particular theme, and for which the college has deemed it essential to invite the participation of solicitors whose products, services or ideas are pertinent to the special event's theme.

B. **Requirements**

1. A solicitor must notify the designated official at each college or center of their intent to solicit on college or center premises. A solicitor who would purport to sell any product or service is responsible for obtaining any necessary tax licenses and must submit to the designated official a certificate of commercial liability insurance and pay to the college or center, in consideration for the opportunity for solicitation, a fee in the amount of $50 per day or $125 per full week.

2. Campus restrictions regarding location, time, date, and use of amplification may apply. All requests for space shall be granted on a first-come, first-served basis only upon completion of the requirements contained in this regulation.

3. All solicitation must take place at tables in designated areas. Standard space will be one or two tables and chairs. Solicitors may be limited to no more than fifty (50) hours of solicitation activity per semester at each college or center.

4. By requesting the opportunity for solicitation on the premises of a college or center, a solicitor warrants that it may lawfully sell or promote its product, service or idea and that such activity does not violate any law, and does not violate any trademark, copyright, or similar proprietary interest. The activity of any solicitor may not violate any existing Maricopa contract.

5. The president of every college or center shall establish for such location restrictions governing the activities of solicitors. Such restrictions shall supplement, but shall not replace or waive, this regulation.

6. A college may waive the fee prescribed in this regulation for any solicitor's participation in a special event if the college determines that such participation will be of particular educational benefit to the interests of that college's students (i.e., non-profits/501(c)3, the armed forces and educational institutions offering transfer information); the participation is sponsored by a club, organization, or academic division; and the participation is approved by the college's Student Life and Leadership department. A college may waive both the fee and the insurance certificate requirements prescribed in this regulation for a student purporting to sell or promote a product or service at a special event, provided that:

    a. Such product or service presents low risk of harm to a potential user;

    b. The product or service is not food or food-related and;

    c. The student is soliciting solely on his or her own behalf and not pursuant to any sales agreement, commission agreement, or similar affiliation or contractual relationship with another entity.

7. Any solicitor who violates this regulation may be deemed a trespasser on college or center premises, and therefore subject to appropriate prosecution within the discretion of the College Safety department and other responsible officials at the college or center. The Maricopa County Community College District, its colleges and centers, assume no responsibility - financial or otherwise - for the acts or omissions of any vendor whose presence on college premises pursuant to this regulation is approved by any college official.

Children on Campus (AR 2.4.10)

Children younger than 18 may not attend any class unless they are officially registered for the class. Children will not be allowed on campus unless participating in an authorized college program or under the supervision of an adult.

Crime Awareness and Campus Security Act (AR 2.4.11)

Federal legislation requires the college to maintain data on the types and number of crimes on college property as well as policies dealing with campus security. To obtain additional information on this subject, contact the college Safety and Security Department.

Workplace Violence Prevention (AR 2.4.12)

It is the policy of the Maricopa Community Colleges to promote a safe environment for its employees, students, and visitors. The Maricopa Community Colleges are committed to working with its employees to maintain an environment free from violence, threats of violence, harassment, intimidation, and other disruptive behavior.

Violence, threats, harassment, intimidation, and other disruptive behavior in our facilities will not be tolerated, and it is the responsibility of all members of the Maricopa Community Colleges to report any occurrence of such conduct. Every employee, student and visitor on Maricopa Community College District property is encouraged to report threats or acts of physical violence of which he/she is aware. All reports will be taken seriously and will be dealt with appropriately. Such behavior can include oral or written statements, gestures, or expressions that communicate a direct or indirect threat of physical harm.

This policy applies to employees and students, as well as independent contractors and other non-employees doing business with the Maricopa Community Colleges. Individuals who commit such acts may be removed from the premises and may be subject to disciplinary action, criminal penalties, or both. The Chancellor is hereby instructed to enact all administrative regulations necessary to implement this policy.

Student Right to Know (AR 2.4.13)

Under the terms of the Student Right To Know Act, the college must maintain and report statistics on the number of students receiving athletically related student aid reported by race and sex, the graduation rate for athletes participating in specific sports reported by race and sex, the graduation rate for students in general, reported by race and sex and other similar statistics. To obtain copies of these reports, contact the Office of Admissions and Records.

Student Rights and Responsibilities

Copyright Act Compliance (2.4.5)

Students are expected to comply with the provisions of the Copyright Act of 1976 pertaining to photocopying of printed materials, copying of computer software and videotaping. In order to assist students in complying with the Copyright Law, appropriate notices shall be placed on or near all equipment capable of duplicating copyrighted materials.

Copyright Regulation (AR 3.2)

A. It is the intent of the Governing Board of the Maricopa County Community College District to adhere to the provisions of the U.S. Copyright Law (Title 17, United States Code, Section 101,

et seq.). Though there continues to be controversy regarding interpretation of the Copyright Law, this policy represents a sincere effort by the Board to operate legally within the District.

B. The Governing Board directs the Chancellor or his designee(s) to develop and distribute to employees guidelines that (1) clearly discourage violation of the Copyright Law and (2) inform employees of their rights and responsibilities under the Copyright Law.

C. Each college president or provost and the Chancellor shall name an individual(s) at each district location who will assume the responsibilities of distributing copyright guidelines, act as a resource person regarding copyright matter and provide training programs on current copyright laws.

D. Employees are prohibited from copying materials not specifically allowed by the (1) Copyright Law, (2) fair use guidelines, (3) licenses or contractual agreements, or (4) other permission.

E. The Governing Board disapproves of unauthorized duplication in any form. Employees who willfully disregard this Board policy and/or the aforementioned copyright guidelines do so at their own risk and assume all liability for their actions.

F. In order to assist employees and students in complying with the Copyright Law, appropriate notices shall be placed on or near all equipment capable of duplicating copyrighted materials.

What Students Should Know About Copyright

What is copyright?

Copyright is a protection afforded under federal law for various types of creative works. A work is copyrightable if it is an original work of authorship fixed in a tangible medium of expression. Copyrightable works include literary, musical or dramatic works; motion pictures and other audiovisual works; choreographic works and pantomimes; sound recordings; and architectural works.

The owner of a copyright in a particular work has the exclusive right to copy, display, perform, distribute, and create a derivative version of the work. Generally, then, this means that you may not do things like duplicate, show or perform a copyrighted work unless it is expressly allowed under the Copyright Act or you have the prior permission of the copyright holder.

A copyright exists in a work at the time it becomes fixed in some tangible medium of expression. Neither registration of the copyright with the federal government nor a copyright notice on the work itself is required for copyright protection.

What is copyright infringement?

Generally, copyright infringement occurs when you copy, display, perform, distribute or create a derivative version of a copyrightable work either without the permission of the copyright holder or when such activity is not otherwise allowed under an exception provided by federal copyright law. The penalties for infringement include significant damages-potentially in excess of $100,000 for each work infringed.

How does copyright law affect information I obtain off the Internet?

Copyright law covers works in both traditional and new media, including digital media. Copyrightable materials are often available on the Internet without any indication of their copyrighted status. As a rule of thumb, you should assume that everything you find on the Internet

is copyrighted, unless otherwise labeled. Even popular activities, such as file swapping or copying software or pictures from the Internet, may be copyright infringement and should be avoided.

The Digital Millennium Copyright Act, which Congress enacted in 2000, affords greater protection for copyright holders of digital works. Generally, then, even if a work appears solely in a digital form, it is likely subject to copyright law protections.

New technology has made many creative works widely available through the Internet. For example, the technology known as Peer to Peer (P2P) allows for the transmission of music, videos, movies, software, video games and other materials-most of which is subject to copyright protection.

Remember that a copyright exists in a work at the time it becomes fixed in some tangible medium of expression. That means that an image you have downloaded from the Internet, as well as a video or musical performance is almost certainly subject to copyright protection. When you download these works, transfer them to a disk or other medium, or send them to a friend, you are infringing on the rights of the copyright holder. Trafficking in such material without the permission of the copyright holder, then, violates copyright law. This includes unauthorized music file sharing over the Internet.

According to a statement recently issued by representatives of the motion picture, recording and songwriting industries, uploading and downloading copyrighted works over the Internet is theft: "It is no different from walking into the campus bookstore and in a clandestine manner walking out with a textbook without paying for it."

Why is it important for a student to be aware of copyright law?

Copyright infringement is expressly prohibited by the US Copyright Act. Anyone who infringes another's copyright in a creative work is subject to liability, and could be required to pay large sums in damages.

In addition, as the law clearly prohibits copyright infringement, using any college resources-such as photocopiers, desktop and laptop computers, printers, central computing facilities, local-area or college-wide networks, Internet access, or electronic mail-for the purpose of infringing a copyright in any work may be grounds for student discipline. According to Maricopa Community College District administrative regulation, "students are expected to comply with the provisions of the Copyright Act of 1976 pertaining to photocopying of printed materials, copying of computer software and videotaping."

Moreover, under the Maricopa Community Colleges Computing Resource Standards, a student is prohibited from the "use of software, graphics, photographs, or any other tangible form of expression that would violate or infringe any copyright or similar legally-recognized protection of intellectual property rights." The Standards also prohibit "transmitting, storing, or receiving data, or otherwise using computing resources in a manner that would constitute a violation of state or federal law.

A student who violates these policies, then, can be disciplined at any of the Maricopa Community Colleges. This discipline could include suspension or even expulsion.

Does copyright law allow me to download files from a college web site? Thanks to recent changes to copyright law, colleges and universities are allowed to transmit copyrighted images, recordings, and other materials over the Internet in connection with distance learning offerings. These changes allow for the performance of non-dramatic literary works or musical works, as well as the display of "reasonable and limited portions" of any work in an amount comparable to that typically displayed in a live classroom setting. Use of the works must, however, be "an integral part" of the distance-learning class session, and available solely to students enrolled in the class. In addition, the transmission of the copyrighted works must be under the direction or actual supervision of an instructor.

Even though the college does not hold the copyright to these works, or even have the express permission of the copyright holder, they may be delivered over the Internet to students in distance learning classes.

The fact that the law authorizes such use of copyrighted materials, though, does not allow a student in these classes to freely download, copy, or re-transmit the works. They are intended solely for use by the institution in connection with distance instruction; any other use would likely constitute a violation of copyright law.

To learn more about copyright, go to: **http://www.dist.maricopa.edu/legal/** and click on "Intellectual Property." While you're there, you should read the Maricopa Community Colleges' Copyright Guidelines. You should also review the complete text of the Computer Resource Standards which can be found under the "Information Technology" link. The Standards also appear in college catalogs and student handbooks.

Taping of Faculty Lectures (AR 3.4)

MCCCD acknowledges that faculty members are, by law, afforded copyright protection in their classroom lectures and, therefore, may limit the circumstances under which students may tape (audio/visual) their classes.

Each faculty member shall inform his/her students within the first week of classes to his/her policy with regard to taping. Failure to do so will accord students the right to tape lectures.

Students with disabilities that render them unable to take adequate lecture notes are entitled to reasonable accommodation to remedy this inability. Accommodation may require a faculty member to exempt a student from his/her taping policy.

Technology Resource Standards (AR 4.4)
Introduction

The Maricopa County Community College District (MCCCD) provides its students and employees access to information resources and technologies. Maricopa recognizes that the free exchange of opinions and ideas is essential to academic freedom, and the advancement of educational, research, service, operational, and management purposes, is furthered by making these resources accessible to its employees and students.

At Maricopa, technological resources are shared by its users; misuse of these resources by some users infringes upon the opportunities of all the rest. As Maricopa is a public institution of higher education, however, the proper use of those resources is all the more important. Accordingly, Maricopa requires users to observe Constitutional and other lawful mandates whose aims are to safeguard and appropriately

utilize technology resources that are acquired and maintained with public funds.

General Responsibilities

Technology resources (including, but not limited to, desktop and laptop systems, printers, central computing facilities, District-wide or college-wide networks, local-area networks, telephones, facsimile machines, scanners, access to the Internet, electronic mail and similar electronic information) of the Maricopa County Community College District are available only to authorized users, and any use of those resources is subject to these Standards. All users of Maricopa's technology resources are presumed to have read and understood the Standards. While the Standards govern use of technology resources District-wide, an individual community college or center may establish guidelines for technology resource usage that supplement, but do not replace or waive, these Standards.

Acceptable Use

Use of Maricopa's technology resources, including websites created by employees and students, is limited to educational, research, service, operational, and management purposes of the Maricopa County Community College District and its member institutions. Likewise, data, voice, images and links to external sites posted on or transmitted via Maricopa's technology resources are limited to the same purposes.

It is not Maricopa's practice to monitor the content of electronic mail transmissions, files, images, links or other data stored on or transmitted through Maricopa's technology resources. The maintenance, operation and security of Maricopa's technology resources, however, require that network administrators and other authorized personnel have access to those resources and, on occasion, review the content of data and communications stored on or transmitted through those resources. A review may be performed exclusively by persons expressly authorized for such purpose and only for cause. To the extent possible in the electronic environment and in a public setting, a user's privacy will be honored. Nevertheless, that privacy is subject to Arizona's public records laws and other applicable state and federal laws, as well as policies of Maricopa's Governing Board all of which may supersede a user's interests in maintaining privacy in information contained in Maricopa's technology resources.

Frequently, access to Maricopa's technology resources can be obtained only through use of a password known exclusively to the user. It is the user's responsibility to keep a password confidential. While Maricopa takes reasonable measures to ensure network security, it cannot be held accountable for unauthorized access to its technology resources by other users, both within and outside the Maricopa community. Moreover, it cannot guarantee users protection against loss due to system failure, fire, etc.

Incidental Computer Usage

Limited incidental personal use of information resources by employees of MCCCD is permitted, except as described in item 16 under prohibited conduct. Faculty and staff are responsible for exercising good judgment about personal use in accordance with regulations, local colleges' existing policies and ethical standards for employees. Personal use refers to activities which only affect or impact the individual. MCCCD employees are required to conduct themselves in a manner which will not raise concern that they are or might be engaged in acts

in violations of the public trust. Refer to the Guidelines for Incidental Computer Usage for the Maricopa Community Colleges.

Incidental Telephone Usage

Limited incidental personal use of information resources by employees of MCCCD is permitted, except as described in item 16 under prohibited conduct. Faculty and staff are responsible for exercising good judgment about personal use in accordance with regulations, local colleges' existing policies and ethical standards for employees. Personal use refers to activities which only affect or impact the individual. MCCCD employees are required to conduct themselves in a manner which will not raise concern that they are or might be engaged in acts in violations of the public trust. Refer to the Guidelines for Incidental Telephone Usage for the Maricopa Community Colleges.

Prohibited Conduct

Prohibited conduct in the use of Maricopa's Technology and Non-Technology Resources includes but is not limited to the following:
1. Posting to the network, downloading or transporting any material that would constitute a violation of Maricopa County Community College District contracts.
2. Unauthorized attempts to monitor another user's password protected data or electronic communication, or delete another user's password protected data, electronic communications or software, without that person's permission.
3. Installing or running on any system a program that is intended to or is likely to result in eventual damage to a file or computer system.
4. Performing acts that would unfairly monopolize technology resources to the exclusion of other users, including (but not limited to) unauthorized installation of server system software.
5. Hosting an unauthorized website that violates the .EDU domain request.
6. Use of technology resources for non-Maricopa commercial purposes, including to advertise personal services, whether or not for financial gain.
7. Use of software, graphics, photographs, or any other tangible form of expression that would violate or infringe any copyright or similar legally-recognized protection of intellectual property rights.
8. Activities that would constitute a violation of any policy of Maricopa's Governing Board, including, but not limited to, Maricopa's non-discrimination policy and its policy against sexual harassment.
9. Transmitting, storing, or receiving data, or otherwise using technology resources in a manner that would constitute a violation of state or federal law, or MCCCD policy or administrative regulation including, but not limited to, obscenity, defamation, threats, harassment, and theft.
10. Attempting to gain unauthorized access to a remote network or remote computer system.
11. Exploiting any technology resources by attempting to prevent or circumvent access, or using unauthorized data protection schemes.
12. Performing any act that would disrupt normal operations of computers, workstations, terminals, peripherals, or networks.
13. Using technology resources in such a way as to wrongfully hide the identity of the user or pose as another person.
14. Allowing any unauthorized access to Maricopa's technology and non-technology resources.

15. Making personal long distance or other toll calls, except where the charges for the calls are incurred directly by the caller or arrangements are otherwise made at the time of the call to directly bill the caller.
16. Intermittent use of technology resources that interferes with the performance of an employee's main responsibilities.
17. Use of technology resources to market or conduct other activities on behalf of a third party regarding the "hosting" of an event that is prohibited under MCCCD's Use of College Facilities administrative regulation.
18. Conducting District or college-related business using any electronic mail account other than one hosted or provided by MCCCD, and approved by the Vice Chancellor of Information Technology Services, even when the email account copies all outgoing and incoming messages to the MCCCD hosted account.

Exceptions:
A. A permissible exception would include faculty to student communications that are FERPA protected and otherwise not subject to public disclosure. Employees who create administrative or operational messages on alternative devices should be mindful that the duty to retain records according to the approved retention schedule exists regardless of the communications tool that is being used.
B. If an employee has a business need to receive e-mail messages that are larger than the established limit on the MCCCD system, or that contain file types that are normally prohibited because of the potential security risks, the employee should open a help desk ticket to request changes to their e-mail account in order to accommodate their business need.

Review and Approval of Alternate E-Mail Account Systems
The prior review and approval by the Vice Chancellor of Information Technology Services is required for the implementation of alternate college electronic mail account systems. Requests will be evaluated based upon the following considerations:
1. The system must be compatible and interoperable with the MCCCD e-mail system.
2. All information within the e-mail system must be e-discoverable, per law.
3. Any proposed changes to the college e-mail system with e-discovery implications must be submitted to District ITS for approval.
4. District ITS must always have full and complete access to ensure the ability to provide any information necessary for e-discovery, local or remote, in a timely and secure manner.

Disclaimer
The home page of a website must display, or link to, the following disclaimer in a conspicuous manner:

All information published online by MCCCD is subject to change without notice. MCCCD is not responsible for errors or damages of any kind resulting from access to its internet resources or use of the information contained therein. Every effort has been made to ensure the accuracy of information presented as factual; however errors may exist. Users are directed to countercheck facts when considering their use in other applications. MCCCD is not responsible for the content or functionality of any technology resource not owned by the institution.

The statements, comments, or opinions expressed by users through use of Maricopa's technology resources are those of their respective authors, who are solely responsible for them, and do not necessarily represent the views of the Maricopa County Community College District.

Information Accuracy and Marketing Standards
In order to help ensure that the most accurate information sources are reflected on web pages, information should be cited, sourced or linked from the website of the official District or college custodian responsible for the particular subject. In addition, the design of web pages shall reflect established marketing standards with respect to the imaging and using of MCCCD marks as outlined in the marketing standards handbook and Use of Marks administrative regulation.

Complaints and Violations
Complaints or allegations of a violation of these standards will be processed through Maricopa's articulated grievance procedures or resolution of controversy.

Upon determination of a violation of these standards, Maricopa may unilaterally delete any violative content and terminate the user's access to Maricopa's technology resources. It is the user's responsibility to demonstrate and/or establish the relevance of content in the event that a content complaint is made official. Users retain the right to appeal actions through Maricopa's grievance procedures or resolution of controversy.

Hazing Prevention Regulation (AR 2.6)
The Maricopa County Community College District (MCCCD) strives to exceed the changing expectations of our many communities for effective, innovative, student-centered, flexible and lifelong educational opportunities. Our employees are committed to respecting diversity, continuous quality improvement and the efficient use of resources. We are a learning organization guided by our shared values of: education, students, employees, excellence, diversity, honesty and integrity, freedom, fairness, responsibility and public trust.

Central to the vitality and dignity of our community of learners is an environment that produces broadly educated responsible citizens, who are prepared to serve and lead in a free society. Academic instruction, co-curricular activities and community involvement come together to meet this goal. All members of the MCCCD community, through the best of their abilities, must be provided the opportunity to contribute in a safe, orderly, civil and positive learning environment. One factor that inhibits the achievement of the above stated purpose is the practice of hazing.
1. Hazing by any student, employee or other person affiliated with MCCCD is prohibited.
2. "Hazing" is defined as any intentional, knowing or reckless act committed by a student or other person in any MCCCD college or affiliated educational setting, whether individually or in concert with other persons, against another student, and in which both of the following apply:
    a. The act was committed in connection with an initiation into, an affiliation with or the maintenance of membership in any club/organization that is affiliated with MCCCD; and
    b. The act contributes to a substantial risk of potential physical injury, mental harm or personal degradation, or causes physical injury, mental harm or personal degradation.
3. Any solicitation to engage in hazing is prohibited.

4. Aiding and abetting another person who is engaged in hazing is prohibited.
5. Victim consent is not a defense for violation of the Maricopa Community Colleges Hazing Prevention Regulation
6. All students, faculty and staff must take reasonable measures within the scope of their individual authority to prevent violations of the MCCCD Hazing Prevention Regulation.
7. Hazing activities and situations include, but are not limited to, the following:
    a. Pre-pledging, illegal pledging or underground activities.
    b. Acts of mental and physical abuse, including, but not limited to: paddling, slapping, kicking, pushing, yelling, biting, duck-walking, line-ups, tuck-ins, belittling, excessive exercise, beating or physical abuse of any kind, and the potentially forced consumption of any food or beverage that contributes to or causes physical injury, mental harm or personal degradation.
    c. Sleep deprivation (activities that deprive prospective and/ or current students and/or members of the opportunity of a minimum of six hours sufficient sleep each day).
    d. Encouraging or forcing use of alcohol or drugs.
    e. Any type of student club/organization scavenger hunt, quest, road trip or other activity that would physically or psychologically endanger prospective and/or current students and/or members or others.
    f. Stroking or physically touching in an indecent or inappropriate manner. See Sexual Harassment Policy 5.1.8
    g. Student club/organization activities that subject prospective and/or current students and/or members or others to public nuisance or spectacle.
    h. Aiding or abetting theft, fraud, embezzlement of funds, destruction of public, personal or private property, or academic misconduct.
    i. Being required to wear odd or look-alike apparel that contributes to or causes physical injury, mental harm or personal degradation.
    j. Personal services that contribute to or cause physical injury, mental harm or personal degradation.
8. Alleged violations of this regulation by students or student organizations can be reported to the vice president of student affairs' office for investigation by any member of the college community.

    The vice president of student affairs' office will investigate the complaint in accordance with the student disciplinary code, all other college and MCCCD policies, and local and state laws.

    Alleged violations of the MCCCD hazing prevention regulation or interference with an investigation under this regulation by students or student organizations are subject to sanctions under the student disciplinary code.

    The student disciplinary code shall govern all proceedings involving such a complaint. Decisions arrived at as outcomes of the proceedings shall be final, pending the normal appeal process.
9. Alleged violations of the MCCCD hazing prevention regulation by any faculty or staff member can be reported to the vice president of student affairs' office for investigation by any member of the college community. The vice president of student affairs' office will investigate the complaint in accordance with college and MCCCD policies, and local and state laws.

Any MCCCD faculty or staff member who knowingly permitted, authorized or condoned the alleged hazing activity is subject to disciplinary action in accordance with college and MCCCD policies, and local and state laws.

10. If the vice president of student affairs' office receives a report or complaint of an alleged hazing activity involving physical injury, threats of physical injury, intimidation, harassment or property damage, or any other conduct that appears to violate Arizona state law, the college will report such conduct to the appropriate college safety office. The said college safety office will investigate, respond to and report on the alleged hazing activity in accordance with all college, district, local, state and federal guidelines, policies and laws.
11. Should the proceedings outlined above substantiate an occurrence of hazing activity-where students or student organizations knowingly permitted, authorized or condoned the hazing activity-the college can recommend the following sanctions against student clubs/organizations:
    a. **CENSURE:** Censure can include the required completion of a program designed with the intent of eliminating the hazing activity. The programs will be devised with the cooperation of all involved parties and monitored by the vice president of student affairs' office.
    b. **PROBATION:** The student club(s)/organization(s) will be placed on probation for a specified period of time. Conditions of probation will be determined by the vice president of student affairs' office and outlined in writing to the student club(s)/organization(s). The probationary term will be monitored by the vice president of student affairs.
    c. **SUSPENSION:** The student club(s)/organization(s) will be suspended. The terms of the suspension can be defined in the sanction, including criteria the student club(s)/ organization(s) must meet within a specified time to be considered for admission or renewal of college recognition status.
    d. **REVOCATION:** The student club(s)/organization(s) will have its status revoked, with the loss of all college associations, recognitions and privileges. The national or international office of an organization, if so affiliated, will be requested to revoke the charter of an organization.
12. The MCCCD hazing prevention regulation is not intended to prohibit or sanction the following conduct:
    a. Customary athletic events, contests or competitions that are sponsored by the college or MCCCD.
    b. Any activity or conduct that furthers the goals of a legitimate educational curriculum, a legitimate co-curricular experience or a legitimate military training program.
13. For the purposes of the MCCCD hazing prevention regulation: "Organization" is defined as an athletic team, association, order, society, corps, cooperative, club or other similar group that is affiliated with MCCCD, whose membership consists primarily of students enrolled at MCCCD and that may also be classroom-related or co-curricular in nature.

Tobacco-Free Environment (AR 4.12)

The District is dedicated to providing a healthy, comfortable and educationally productive environment for students, employees and visitors. Toward that end, the District's Governing Board adopted a resolution on March 26, 1991 that established the parameters for smoking on District property.

In November 2006, the citizens of Arizona voted into law Proposition 201, the Smoke-free Arizona Act (Arizona Revised Statutes §36-601.01-M) does not repeal the District's more restrictive regulation and authorizes the District to enact policies that are more restrictive than the act should it desire to do so. (See ARS §36-601.01-M)

A. **Definition**
   For purposes of this regulation, "smoking" will mean all uses of tobacco.

B. **Prohibitions**
   1. Smoking is prohibited in enclosed district/college/center buildings and within twenty-five (25) feet of any building entrance or exit.
   2. Smoking is prohibited in any areas where flammable gases, liquids or any other volatile materials are located or stored or in which a fire or safety hazard may exist.
   3. Smoking is prohibited in all district/college center vehicles.
   4. The sale of cigarettes or other tobacco items is prohibited at all sites within the Maricopa District.

C. **Enforcement**
   The success of this regulation will depend upon the thoughtfulness, consideration and cooperation of smokers and nonsmokers. All employees and students share in the responsibility for adhering to and enforcing the regulation. Any problems should be brought to the attention of the appropriate supervisor and handled through normal channels.

D. **Support**
   Signs will be posted at the entrance to and throughout buildings and in vehicles as reminders of the no smoking regulation.

Abuse-Free Environment (AR 2.4.7)

I. **Substance Abuse/Misuse Statement**

Drug abuse and misuse has become a national issue and is receiving national attention, particularly in the academic community. The insidious effects of the abuse of these agents are also felt by all walks of life and economic levels. Therefore, as an education providing institution, we are responsible to provide knowledge and guidelines about prevention, control, and treatment of the abuse/misuse of alcohol, illegal and legal drug uses and misuses.

This policy statement has been constructed on the belief that higher education has a responsibility to face safety and health factors of substance abuse/misuse issues forthrightly and innovatively. We believe that the community college needs to adapt programs applicable to their community as well as to our individual student's needs. The policy statements should be comprehensive, understood by those expected to comply, realistic and enforceable, consistently applied, and cover foreseeable dangers.

Construction of this statement has been founded on concerns of individual safety, educational quality, and legal liability. It is recognized that each individual is responsible for his/her actions and must be afforded an opportunity to develop knowledge, skills and talent, and be willing to share community responsibilities.

The Maricopa Community College District has an equal "duty to care" responsibility and a commitment to substance abuse/misuse education for all students and employees.

The Maricopa Community College District shall:

A. Visibly demonstrate a performance of the Maricopa Community College District "duty to care".
B. Comply with requirements for federal funds.
C. Describe what the college does about substance abuse/misuse (alcohol, drugs, anabolic steroids).
D. Inform/educate members of the academic community of adverse effects of these substances.
E. Inform/educate the academic community about the policies concerning substance misuse and abuse.
F. Discourage illegal drug abuse and legal substance misuse.
G. Provide individual and group counseling
H. Provide assistance and guidance to obtain treatment and rehabilitation of any identified problem.

To achieve these objectives, the program must provide an environmentcapable of:

A. Developing and implementing substance misuse/abuse prevention programs.
B. Providing educational training and prevention programs for the college and community it serves.
C. Providing timely and accurate information dissemination.
D. Establishing supportive counseling programs as needed.
E. Establishing a strong on-going evaluation of services.
F. Providing assistance to obtain treatment and rehabilitation of substance abuse/misuse.
G. Clarifying the college regulations for control of alcohol and drug use.
H. Providing procedures that the college will follow to correct and stabilize emergency situations.

Each college will identify key people to provide emergency services and to contact and work with outside agencies. The Maricopa Community College District is committed to establishing a preventative substance abuse program at each college designed to affect positively the problems of irresponsible use of alcohol and the use and abuse of illegal substances. A main focus of the program will be on education of the campus community and assistance to individuals.

The Maricopa Community College District fully supports disciplinary action for misconduct and the enforcement of state laws governing the use of alcohol and the use, abuse, possession or distribution of controlled substances or illegal drugs.

II. **Student Program to Prevent Illicit Use of Drugs and Abuse of Alcohol**

A. **Introduction and Purpose**

The Federal Drug-Free Schools and Communities Act of 1989 (Public Law 101-226) requires federal contractors and grantees to certify that they will provide a drug-free school. As a recipient of federal grants, the District must adopt a program toward accomplishing this goal. While federal legislation has been the impetus for creation of the program, the administration and Governing Board recognize that substance abuse is a problem of national proportions that also affect students at Maricopa Community Colleges. Based upon that concern, it is intended that this program on prevention of alcohol and drug abuse on college campuses will go beyond the strict dictates of the law and will serve as a comprehensive educational and resource tool.

The Maricopa Community Colleges are committed to maintaining learning environments that enhance the full benefits of a student's educational experience. The Maricopa

Community College District will make every effort to provide students with optimal conditions for learning that are free of the problems associated with the unauthorized use and abuse of alcohol and drugs. Part of the educational mission of Maricopa Community Colleges, in conjunction with this program, is to educate students about positive self-development, the benefits of a healthy lifestyle and the health risks associated with substance abuse.

The purpose of this program is to:
1. Ensure that the Maricopa Community Colleges working and learning environment for students and the public is safe, orderly and free of illegal activity.
2. Comply with the Drug-Free School and Communities Act of 1989, and other relevant substance abuse laws.
3. Provide students with access to appropriate treatment and rehabilitation assistance for problems associated with substance use or abuse.

B.   Standards of Conduct
In the student handbooks of the Maricopa Community Colleges under codes of conduct, the following are examples of behavior that is prohibited by law and/or college rules and policies:
1. Drinking or possession of alcoholic beverages on the college campus.
2. Misuse of narcotics or drugs.

C.   Sanctions for Violation of Standards of Conduct
Disciplinary actions include, but are not limited to:
1. Warning,
2. Loss of privileges,
3. Suspension, or
4. Expulsion.

D.   Legal Consequences of Alcohol and Other Drugs
   1.   Laws Governing Alcohol
The State of Arizona sets twenty-one as the "legal drinking age." An underage person who buys, receives, possesses or consumes alcoholic beverages is guilty of a misdemeanor and may be subject to a fine and imprisonment for up to six months.

Arizona Revised Statutes, Title 28, Chapter 4, Article 3 prohibit driving while under the influence of intoxicating liquor or drugs (DWI). Drivers arrested for a DWI who refuse to be tested face suspension of their licenses or permits to drive for twelve months. A driver whose test results show a blood or breath alcohol concentration of 0.08 or more will, on conviction for a first offense, be sentenced to no less than ten days in jail, pay a fine of not less than $250, pay an additional assessment of $1,000, and may be required to perform community restitution and equip his or her vehicle with a certified ignition interlock device. On conviction of a second offense within 84 months, the person shall have his/her driving privilege revoked for one year. Additionally, this person shall be sentenced to not less than 90 days in jail, pay a fine of not less than $500, pay an assessment of $2,500, and shall be ordered to perform at least 30 hours of community restitution. Additionally, the person may be required to equip his or her vehicle with a certified ignition interlock device for up to twelve months starting on the date that his or her driving privileges are restored.

2.   Federal Penalties and Sanctions for Illegal Possession of a Controlled Substance
First conviction: Up to one year imprisonment and fined at least $1,000 but not more than $100,000, or both. (21 United States Code §844)
After one prior drug conviction: At least fifteen days in prison, not to exceed two years and fined at least $2,500 but not more than $250,000, or both. (21 United States Code §844)

After two or more prior drug convictions: At least ninety days in prison, not to exceed three years and fined at least $5,000 but not more than $250,000, or both. (21 United States Code §844)

Special sentencing provisions for possession of crack cocaine (21 United States Code §844):

Mandatory at least five years in prison, not to exceed twenty years and fined up to $250,000, or both, if:
a) First conviction and the amount of crack possessed exceeds five grams.
b) Second conviction and the amount of crack possessed exceeds three grams.
c) Third or subsequent crack conviction and the amount of crack possessed exceeds one gram.

Forfeiture of personal and real property used to possess or to facilitate possession of a controlled substance if that offense is punishable by more than one year imprisonment. (See special sentencing provisions re: crack) (21 United States Code §853)

Forfeiture of vehicles, boats, aircraft or any other conveyance used to transport or conceal a controlled substance. (21 United States Code §§853 and 881(a)(4))

Civil fine of up to $10,000 (pending adoption of final regulations). (21 United States Code §884(a))

Denial of Federal benefits, such as student loans, grants, contracts, and professional and commercial licenses, up to one year for first offense, up to five years for second and subsequent offenses. (21 United States Code §862)

Ineligible to receive or purchase a firearm. (21 United States Code §922(g))

Miscellaneous: Revocation of certain Federal licenses and benefits, e.g. pilot licenses, public housing tenancy, etc., are vested within the authorities of individual Federal agencies.

Note: These are only Federal penalties and sanctions.
3.   State Penalties and Sanctions
Title Thirteen, Chapter 34 of the Arizona Revised Statutes lists drug offenses and their penalties. Following is list of drugs that are frequently misused with a description of the potential penalties attached to a conviction.
a) Marijuana: A first offense for possession or use of marijuana in an amount of less than two pounds constitutes a class 6 felony and carries a possible prison term of one year and a fine of not less than

$750. The sale of marijuana in an amount of less than two pounds constitutes a class 3 felony and carries a prison sentence of three and one-half years and a fine of not less than $750. There are other possible penalties as well. (ARS §13-3405)

    b)   LSD and Methamphetamine: Possession, use and sale are felonies carrying sentences from four to five years and fines of not less than $1,000. There are other possible penalties as well, including a presumptive sentence of ten years for the sale of methamphetamine. (ARS §13-3407)

    c)   Heroin and Cocaine: Possession, use and sale are felonies carrying sentences up to five years and a fine of not less than $2,000. There are other possible penalties as well. (ARS §13-3408)

III. Alcoholic Beverages - Usage Regulation (AR 4.13)

This Administrative Regulation prohibits the use of District funds to purchase alcoholic beverages or services related to them except in small amounts to be used in cooking for the District's culinary programs. Additionally, it generally prohibits the presence of alcoholic beverages on premises owned by the District, or those leased or rented by the institution. It permits a few, narrow exceptions to that latter prohibition. The exceptions are not available to the general population of District employees or officials. More importantly, they are established to ensure that the District's actions stay within the boundaries of state law and the District's insurance coverage. Therefore, strict compliance with this regulation is essential.

A. **No Funds.** No funds under the jurisdiction of the governing board of the District may be used to purchase alcoholic beverages, except for the limited purposes of purchasing small amounts of them for use solely as ingredients in food preparation for classes and at the District's culinary institutes. Alcoholic beverages may not be stored on premises owned, leased, or rented by MCCCD except as provided in Paragraph eight.

B. **No Service or Sale of Alcoholic Beverages.** The law of the state of Arizona strictly regulates the service, sale, distribution and consumption of alcoholic beverages. In light of that law, the District does not permit alcoholic beverages to be served, sold or distributed on or in the premises owned by the District or leased or rented by the Maricopa Community Colleges for District-approved educational, fund-raising or other community purposes, except as provided in Paragraphs three and seven.

C. **Service at District Events on District-owned Property.** The Chancellor has the sole authority to approve the service, but not the sale or other distribution, of wine or beer at District events on district-owned property that the Chancellor either sponsors or approves. The only District employees authorized to request the Chancellor's approval are the College Presidents and the Vice Chancellors. Additionally, the law strictly limits the service of wine or beer by the District on District-owned property, and those restrictions are specified in Paragraph five. Unless approved by the Chancellor in compliance with the law and this regulation, alcoholic beverages may not be served on District-owned property.

D. **Event Form Required.** A College President or Vice Chancellor who wishes to obtain the Chancellor's approval for the service of wine or beer at a District-sponsored event on District-owned property shall forward a completed written request to the Chancellor no later than 30 days before the event. The request form is available at: AS-6 - Notice of Intent to Serve Beer and Wine. On signing the form, the Chancellor will provide a copy of it to the requestor and to the MCCCD Risk Manager. For events that the Chancellor sponsors, he or she will complete the form, sign it and provide it to the MCCCD Risk Manager no later than 10 business days before the event. The MCCCD Risk Manager will forward copies of the forms to the Arizona Department of Liquor Licenses and Control.

E. **Service restrictions required by law.** An event approved under Paragraph four must, by law, comply with the all of the following restrictions:

1. The only alcoholic beverages that may be served and consumed are wine and beer. Wine consumption is limited to 6 oz. per person, and beer consumption is limited to 24 oz;
2. The gathering must be by invitation only, and not open to the public;
3. The gathering may not exceed 300;
4. Invitees may not be charged any fee for either the event or the beer or wine; and
5. The consumption may only take place between noon and 10:00 p.m.

Additionally, beer and wine may only be served by a beverage service contractor whose liquor license with the state of Arizona is in good standing, except as provided in Paragraph 6. The contractor must provide all of the beverages served and well as the servers or bartender. Before the event, the contractor must provide a certificate of insurance that meets the requirements of the District's Risk Manager and that adds the District as an additional insured. The contractor must also agree in writing to indemnify the District regarding the service of the beverages.

F. **Culinary Institutes.** The Chancellor may sponsor or approve an event at one of the District's culinary institutes. Students may serve wine and beer at the event as part of their class requirements, subject to the limitations of Paragraph 5. Any student serving those beverages must, by law, be 19 years or older.

G. **Third-Party Event.** The Maricopa County Community College District foundation and the friends of public radio Arizona may, with the approval of the Chancellor, sponsor an event on District-owned property under this regulation. The City of Phoenix and the friends of the Phoenix Public Library may also do so, with the approval of the Chancellor, at the joint library on the campus of South Mountain Community College. These third-party, non-district entities are solely responsible for determining the steps that they are required to take to comply with Arizona's alcoholic beverages laws. Additionally, they must comply with the following steps:

1. The entity obtains a liquor license from the Arizona Department of Liquor Licenses and control for each event and fully complies with the laws, rules and other requirements applicable to that license;
2. The entity completes the form available at AS-7 - Request to Serve Beer and Wine - Third Party. And provides it to the Chancellor for approval along with a copy of the liquor license no later than 60 days before the event;

3. The entity provides a certificate of insurance demonstrating that it has liquor liability coverage and that it adds the District as an additional insured;

4. The entity agrees in writing to indemnify the District from any claims of any kind arising out of the event;

5. Beer and wine are the only alcoholic beverages served and only served through a beverage service contractor whose liquor license with the state of Arizona is in good standing;

6. The contractor provides all of the beverages served and well as the servers or bartenders;

7. Before the event, the contractor provides a certificate of insurance that meets the requirements of the District's Risk Manager and that adds the District as an additional insured; and

8. The contractor agrees in writing to indemnify the District regarding the service of the beverages.

H.   Receipt of beverages; storage. It is not permissible to store wine or beer on premises owned, leased or rented by MCCCD, except as provided in this paragraph. Alcoholic beverages purchased for use in cooking in District culinary courses must be stored in such a way that it is inaccessible to anyone except the Director or designee of the culinary program. For wine and beer to be used for receptions at the district's culinary institutes, as authorized by this administrative regulation, the following storage requirements apply:

1. Wine and beer to be served may only be brought to MCCCD property no sooner than four hours prior to the event, and remain there no longer than four hours after the event; and

2. Once the wine and beer arrives on MCCCD property, the Director the culinary program shall assign an MCCCD employee to ensure that it is not stolen or that it is not opened until ready to be served.

I.   Compliance with law. In compliance with applicable law, any persons planning an event under this administrative regulation are required to familiarize themselves with the pertinent laws and other requirements established by the state of Arizona for the service of alcoholic beverages, particularly those in Arizona Revised Statutes Title 4 (Alcoholic Beverages) Chapters 1 (General Provisions), 2 (Regulations and Prohibitions) and 3 (Civil Liability of Licensees and Other Persons) as well as Arizona Administrative Code Title 19, Articles 1 (State Liquor Board) and 3 (Unlicensed Premises Definitions and Licensing Time-Frames).

J.   Residential Housing. Lawful occupants of residential housing under the jurisdiction of the Governing Board, if over the age of 21 years and not otherwise lawfully barred from such practice, may possess and consume alcoholic beverages in the privacy of their respective leased housing facility. Guests of such occupants over the age of 21 years shall have the same privilege. No alcohol is permitted in public areas (nor common areas of a dormitory) at any time.

K.   Personal Responsibility. The personal or individual purchase of alcoholic beverages by individuals attending District-approved functions held in places serving alcoholic beverages is a personal and individual responsibility. Administrative discretion shall be exercised in the approval of the location of such activities, as such decision pertains to the nature of the group involved.

L.   Miscellaneous Usage Issues. Any issues that are not specifically addressed within this regulation require the review and determination by the Chancellor or Executive Vice Chancellor and Provost on matters related to culinary programs, academic or student affairs.

IV.   Other Health Concerns - General Guidelines Concerning AIDS
Neither a diagnosis of AIDS nor a positive HIV antibody test will be part of the initial admission decision for those applying to attend any of the Maricopa Community Colleges. The Maricopa Community Colleges will not require screening of students for antibody to HIV.

Students with AIDS or a positive HIV antibody test will not be restricted from access to student unions, theaters, cafeterias, snack bars, gymnasiums, swimming pools, recreational facilities, restrooms, or other common areas, as there is not current medical justification for doing so.

Where academically and logistically feasible, students who have medical conditions, including AIDS, may seek accommodation in order to remain enrolled. Medical documentation will be needed to support requests for accommodation through the Office of Disabled Resources and Services or the Office of Vice President of Student Affairs.

The Maricopa Community Colleges acknowledge the importance of privacy considerations with regard to persons with AIDS. The number of people who are aware of the existence and/or identity of students who have AIDS or a positive HIV antibody test should be kept to a minimum. When a student confides in a faculty member, knowledge of the condition should be transmitted to the appropriate vice president or designee who will make the determination if the information should be further disseminated. It should be remembered that mere exposure to the person in a classroom does not constitute a need to know the diagnosis. It is, therefore, unnecessary to document in a student's file the fact that he or she has AIDS unless the information is to be used for accommodation reasons. Sharing confidential information without consent may create legal liability.

Students are encouraged to contact the Office of Disabled Resources and Services and/or the vice president of student affairs or designee for the types of services available in the district or community on matters regarding AIDS or the HIV virus.

DISABILITY RESOURCES AND SERVICES
Eligibility for Accommodations & Required Disability Documentation (AR 2.8.1)

Purpose
To specify the disability documentation requirements that will qualify (i.e., support current and essential needs) Maricopa County Community College District students for reasonable and appropriate accommodations through each college's disability services office or designated professional. This regulation is implemented in accordance with the American's with Disabilities Act (42 U.S.C. Chapter 126).

General Eligibility Requirements
Each applicant with a disability must meet MCCCD admissions requirements, or be enrolled as an MCCCD student, and must provide Disability Resource Services (DRS) with required documentation verifying the nature and extent of the disability prior to receiving any

accommodation. The disability services office coordinator/program advisor is responsible for evaluating documentation and determining accommodation eligibility.

Specific Eligibility Requirements

Physical Disabilities - Required Documentation

The student must submit a written, current diagnostic report of any physical disabilities that are based on appropriate diagnostic evaluations administered by trained and qualified (i.e., certified and/or licensed) professionals (e.g., medical doctors, ophthalmologists, neuropsychologists, audiologists). Disability diagnosis categories include:

l.   Orthopedic Disability
2.   Blind or Visual Impairment
3.   Deaf or Hard-of-Hearing
4.   Traumatic Brain Injury
5.   Other Health-Related/Systemic Disabilities

The Written Diagnostic Report must include:

1.   A clear disability diagnosis, including a clinical history that establishes the date of diagnosis, last contact with the student, and any secondary conditions that might be present.
2.   The procedures used to diagnose the disability.
3.   A description of any medical and/or behavioral symptoms associated with the disability.
4.   A discussion of medications, dosage, frequency, and any adverse side effects attributable to their use that the,[delete comma] student has experienced.
5.   A clear statement specifying functional manifestations (i.e., substantial limitations to one or more major life activities and degree of severity) due to the disability and/or medications for which the student may require accommodations.
6.   A recommendation for accommodation, including rationale. If the accommodation recommendations are specific to limitations in learning (e.g., reading, mathematics, written expression), an appropriate psycho-educational or neuropsychological evaluation must be administered to document ability/achievement discrepancies.

Specific Learning Disabilities—Required Documentation

The student shall submit a written diagnostic report of specific learning disabilities that is based on current appropriate, comprehensive, psycho educational evaluations using adult normed instruments.

The assessment or evaluation which leads to the diagnosis must be administered by a trained and qualified (i.e., certified and/or licensed) professional (e.g., psychologist, school psychologist, neuropsychologist, or educational diagnostician) who has had direct experience with adolescents and adults with learning disabilities.

An appropriate Psycho Educational Evaluation must include comprehensive measures in each of the following areas:

1.   Aptitude (the evaluation must contain a complete intellectual assessment, with all sub-tests and standard scores reported).
2.   Academic achievement (the evaluation must contain a comprehensive achievement battery with all sub-tests and standard scores reported) the test battery should include current levels of functioning in the relevant areas, such as reading (decoding and comprehension), mathematics, and oral and written expression.
3.   Information processing (the evaluation should assess specific

information processing areas such as short- and long-term memory, sequential memory, auditory and visual perception/processing, processing speed, executive function, and motor ability).

Examples of Measures

1.   Wechsler Adult Intelligence Scale-Revised (WAIS-R)
2.   Wechsler Adult Intelligence Scale-Third Edition
3.   Stanford Binet Intelligence Scale-Fourth Edition
4.   Woodcock-Johnson Psycho-Educational Battery-Revised: Tests of Cognitive Ability
5.   Kaufman Adolescent and Adult Intelligence Test

Achievement

1.   Wechsler Individual Achievement Tests (WIAT)
2.   Woodcock-Johnson Psycho-Educational Battery-Revised: Tests of Achievement (W-Jr)
3.   Stanford Test of Academic Skills (TASK)
4.   Scholastic Abilities Test for Adults (SATA)

Information Processing

1.   Subtests of The Wais-R or Wais-Third Edition
2.   Subtests on The Woodcock-Johnson Psycho-Educational Battery-Revised: Tests of Cognitive Ability

Diagnostic Report

The Diagnostic Report must include the following information:

1.   A diagnostic interview that addresses relevant historical information, past and current academic achievement, instructional foundation, past performance in areas of difficulty, age at initial diagnosis, and history of accommodations used in past educational settings and their effectiveness.
2.   A list of all instruments used in the test battery.
3.   Discussion of test behavior and specific test results.
4.   A diagnostic summary statement with the following information:
   a.   A clear and direct statement that a learning disability does or does not exist, including a rule-out of alternative explanations for the learning problems. Terms such as "appears," "suggests," or "probable" used in the diagnostic summary statement do not support a conclusive diagnosis.
   b.   A clear statement specifying the substantial limitations to one or more major life activities.
   c.   A psychometric summary of scores.
   d.   A recommendation for accommodations, including rationale.

Diagnosis of specific learning disabilities that do not contain psycho-educational measures may not be used for determining eligibility for academic accommodations. For example, school plans such as individualized education plans (IEPS) or 504 plans are not adequate documentation; however, they can be included with the required evaluation. DRS reserves the right to request reassessment when questions regarding previous assessment or previous service provision arise.

Attention Deficit Hyperactivity Disorder (ADHD)/Attention Deficit Disorder (ADD)—Required Documentation

The student shall submit a current diagnosis of attention deficit hyperactivity disorder (ADHD)/attention deficit disorder (ADD) that is based on appropriate diagnostic evaluations administered by trained and qualified (i.e., certified or licensed) professionals (e.g., psychiatrists, psychologists, or neuropsychologists).

The Diagnostic Report must include the following:

1. A diagnostic interview addressing relevant historical information, past and current academic achievement, age at initial diagnosis, discussion of medication, and history and effectiveness of accommodations in past educational settings.
2. The procedures used to diagnose the disability (including a list of all instruments used in the assessment).
3. Discussion of the testing results and behavior, including the symptoms that meet the criteria diagnosis. If the student was evaluated while on medication, the effect this may have had on performance must be noted.
4. DSM-IV diagnosis (including all five axes)
5. A diagnostic summary statement that includes the following information:
   a. A clear statement that ADHD/ADD does or does not exist, including a rule-out of alternative explanations for behaviors. Terms such as "appears," "suggests," or "has problems with" used in the diagnostic summary statement do not support a conclusive diagnosis.
   b. A clear statement specifying the substantial limitations to one or more major life activities and the degree of severity. If the limitations are in learning (e.g., reading, mathematics, and written expression), an appropriate psycho-educational evaluation must be administered to document ability/achievement discrepancies.
   c. A recommendation regarding medications or medical evaluation(s).
   d. A recommendation for accommodations, including rationale.

Psychological Disabilities — Required Documentation

If the diagnostic report is more than one year old, a letter from a qualified professional that provides an update of the diagnosis with a description of the individual's current level of functioning during the past year, and a rationale for the requested accommodations must be submitted.

The Diagnostic Report must include the following:

1. A clinical interview, relevant historical information, age at initial diagnosis, duration and severity of the disorder.
2. Discussion of medications review of past and current academic achievement, and history of disability accommodations and their effectiveness.
3. The procedures used to diagnose the disability (include a list of all instruments used in the assessment and test scores as applicable).
4. Discussion of the assessment results.
5. DSM-IV diagnosis (include all five axes).
6. A diagnostic summary statement that includes the following:
   a. A clear statement that a disability does or does not exist. Terms such as "appears," "probable," and "suggests" used in the diagnostic summary statement do not support a conclusive diagnosis.
   b. A clear statement specifying the substantial limitations to one or more major life activities. If the limitations are in learning (e.g., reading, mathematics, and written expression), an appropriate psycho-educational evaluation must be administered to document ability/achievement discrepancies.
   c. A discussion of medications and their possible impact on academic functioning (e.g., concentration, attention, sedation)
   d. A recommendation for essential accommodations relative to the diagnosed disability, including rationale.

e. The duration for which these accommodations should be provided based on the current assessment.
f. A recommendation regarding reevaluation to determine ongoing need for disability accommodations (e.g., one semester, one year, two years).

Temporary Impairments

Some disabilities are temporary and may require accommodations for a limited time. Each case is considered individually. The following documentation is required:

1. Written correspondence on letterhead from a qualified professional stating diagnosis, functional limitations necessitating the accommodation, and the estimated length of time services will be needed.
2. Services may be provided for ten (10) working days pending receipt of documentation. If documentation is not received by that time, services will be cancelled.

Special Considerations

A requirement for documentation prescribed in this regulation may be considered at the discretion of each college's disability services office or designated professional if, in the professional opinion of the responsible college's disability services office or designated professional, such consideration is in the best interest of the student and will neither undermine the integrity of any college offering nor violate any mandate under state or federal law. All situations shall be considered on an individual, case-by-case basis.

Reasonable accommodation is required for students with known disabilities. MCCCD will make every attempt to provide "preferred" accommodations, however, "the most effective and reasonable" accommodation may be determined to meet sufficient accessibility needs.

Eligibility of Students Taking Reduced Course Loads (AR 2.8.2)

Although any student may register for fewer than twelve credit hours, a student with a disability may request a reduced academic load as a reasonable and appropriate accommodation. A college Disability Resource Services (DRS) professional may certify that a student who is afforded a reduced academic load as an accommodation for a disability shall nevertheless be deemed a full-time student. Such certification shall be solely to enable the student to seek eligibility for health insurance benefits and to seek eligibility to comply with mandates of the National Junior College Athletic Association. The college DRS professional will certify that a student may be deemed a full-time student as provided under this regulation only on a semester-by-semester basis.

The appropriate college offices will receive documentation of the DRS professional's certification from the professional or the student. An incoming student may apply for such certification upon acceptance to the college. Requests for certification must be made prior to the beginning of each semester. Every attempt will be made to accommodate these requests.

The following criteria also apply:

1. Students taking a reduced course load must register for at least 6 credit hours (based on DRS approval) during the regular fall and spring semesters. It is recommended that students register for at least three (3) credit hours during the summer to offset the impact of academic eligibility.

2. Students taking a reduced course load must maintain satisfactory academic progress standards as defined by the College catalog.

3. The reduced credit load may result in an adjusted financial aid package. *There may be additional ramifications including, but not limited to, extra time to complete college, insurance coverage, Vocational Rehabilitation funding, etc.*

4. Eligibility for Federal Stafford Loans may be reduced according to the total number of credit hours taken in the full academic year. A student, taking a reduced course load, must be at least half time in a semester (6 credits) in order to receive a Stafford Loan.

5. The amount of Federal Financial Aid (Title IV) awarded is based on the actual number of credit hours taken.

6. Requirements for continuation of funding through Vocational Rehabilitation may differ. The student must contact his/her VR counselor to determine how a reduced course load will impact their funding.

7. The National Junior College Athletic Association (NJCAA) has published standards in regard to the designation of Certified Disabled Student-Athlete in Article V Section J of the NJCAA bylaws. This procedure addresses the NJCAA criteria for reduced course loads.

Application Process

1. Applications for reduced course loads must be submitted to the Disability Resources & Services professional with supporting documentation. **Requests must be made prior to the beginning of each semester.**

2. Supporting documentation must include a diagnostic evaluation from an appropriate professional. The documentation must meet the guidelines set forth by the Maricopa Community College District's Documentation Policy in order to evaluate the current impact of the disability in regards to the request. Students are required to complete an application form for this status every semester, but do not need to re-submit their documentation. Continuation of this status is not automatic. Each case will be re-evaluated at the end of the semester to determine if this accommodation is still appropriate.

3. Students requesting a reduced course load should consult with their academic advisor regarding the consequences of this status for making progress toward graduation requirements and eligibility for various academic distinctions and designations.

4. Students registered in occupational and/or academic programs that have specific block formats will not be considered for reduced course loads.

5. Students who are approved for a reduced course load will be required to sign the Reduced Course Load Approval Form (see Appendix S-10) which includes a statement acknowledging that he or she has reviewed the consequences that go with reduced load status and accepts them.

6. When a reduced course load status is granted by the Disability Resources & Services professional, a copy of the Reduced Course Load Approval Form will be sent to the appropriate individuals.

Academic Misconduct (AR 2.3.11)

A. **Definitions**
   1. **Academic Misconduct** - includes misconduct associated with the classroom, laboratory or clinical learning process. Examples of academic misconduct include, but are not limited to, cheating, plagiarism, excessive absences, use of abusive or profane language, and disruptive and/or threatening behavior.

   2. **Cheating** - includes, but is not limited to, (a) use of any unauthorized assistance in taking quizzes, tests, assessment tests or examinations; (b) dependence upon the aid of sources beyond those authorized by the faculty member in writing papers, preparing reports, solving problems, or carrying out other assignments; or (c) the acquisition, without permission, of tests or other academic material belonging to a member of the college faculty or staff.

   3. **Plagiarism** - includes, but is not limited to, the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. Information gathered from the internet and not properly identified is also considered plagiarism.

B. **Sanctions**

Any student found by a faculty member to have committed academic misconduct maybe subject to the following sanctions: (Note: sanctions 1, 2, 3, and 4 may be imposed by a faculty member. The faculty member may recommend to the department chairperson and the appropriate vice president of academic affairs or designee that sanctions 5, 6, or 7 be imposed. College suspension or expulsion will be imposed only by the appropriate vice president of academic affairs or designee.

   1. **Warning** - A notice in writing to the student that the student has violated the academic code.

   2. **Grade Adjustment** - Lowering of a score on a test or assignment.

   3. **Discretionary Sanctions** - Additional academic assignments determined by the faculty member.

   4. **Course Failure** - Failure of a student from a course where academic misconduct occurs.

   5. **Disciplinary Probation** - Disciplinary probation is for a designated period of time and includes the probability of more severe sanctions if the student commits additional acts of academic misconduct.

   6. **College Suspension** - Separation of the student from the college for a definite period of time, after which the student is eligible to return. Conditions for readmission may be specified. (A suspension from one Maricopa Community College will apply to all other colleges/centers in the District.)

   7. **College Expulsion** - Permanent separation of the student from the college. (Expulsion from one Maricopa Community College will apply to all colleges/centers in the District.)

C. **Appeal of Sanctions for Academic Misconduct**

Students can appeal sanctions imposed for academic misconduct by following the instructional grievance process (AR 2.3.5; Appendix S-6).

Disciplinary Standards

A. **Disciplinary Probation and Suspension (AR 2.5.1)**

According to the laws of the State of Arizona, jurisdiction and control over the Maricopa Community Colleges are vested in the District Governing Board. The Governing Board and its agents- the chancellor, administration and faculty-are granted broad legal authority to regulate student life subject to basic standards of reasonableness.

In developing responsible student conduct, the Maricopa Community Colleges prefer mediation, guidance, admonition and example. However, when these means fail to resolve problems of student conduct and responsibility, appropriate disciplinary procedures will be followed.

Misconduct for which students are subject to disciplinary action falls into the general areas of:

1. Cheating on an examination, assessment tests, laboratory work, written work (plagiarism), falsifying, forging or altering college records
2. Actions or verbal statements which threaten the personal safety of any faculty, staff, students, or others lawfully assembled on the campus, or any conduct which is harmful, obstructive, disruptive to, or interferes with the educational process or institutional functions
3. Violation of Arizona statutes, and/or college regulations and policies
4. Use of college computer resources such as the Internet in violation of Technology Resource Standards (AR 4.4) which may result in notification of law enforcement authorities

B. Disciplinary Removal from Class

A faculty member may remove a student from class meetings for disciplinary reasons. If an instructor removes a student for more than one class period, the faculty member shall notify the department/division chair and the appropriate vice president or designee in writing of the problem, action taken by the faculty member, and the faculty member's recommendation. If a resolution of the problem is not reached between the faculty member and the student, the student may be removed permanently pursuant to due process procedures.

Student Conduct Code (AR 2.5.2)

The purpose of this Code is to help ensure a healthy, comfortable and educationally productive environment for students, employees and visitors.

Article I: Definitions

The following are definitions of terms or phrases contained within this Code:

A. 'Accused student' means any student accused of violating this Student Conduct Code.
B. "Appellate boards" means any person or persons authorized by the college president to consider an appeal from a Student Conduct Board's determination that a student has violated this Student Conduct Code or from the sanctions imposed by the Student Conduct Administrator. The college president may act as the appellate board.
C. "College" means Maricopa Community College or center.
D. "College premises" means all land, buildings, facilities and other property in the possession of or owned, used or controlled by the college or District.
E. "College official" means any person employed by the college or District, performing assigned administrative or professional responsibilities pursuant to this Student Conduct Code. The college president shall designate the college or center official to be responsible for the administration of the Student Conduct Code.
F. "Complainant" means any person who submits a charge alleging that a student violated this Student Conduct Code. When a student believes that s/he has been a victim of another student's misconduct, the student who believes s/he has been a victim

will have the same rights under this Student Conduct Code as are provided to the complainant, even if another member of the college community submitted the charge itself.
G. "Day" means calendar day at a time when college is in session, and shall exclude weekends and holidays.
H. "Disruptive behavior" means conduct that materially and substantially interferes with or obstructs the teaching or learning process in the context of a classroom or educational setting.
I. "District" means the Maricopa County Community College District.
J. "Faculty member" means any person hired by the college or District to conduct classroom or teaching activities or who is otherwise considered by the college to be a member of faculty.
K. "May" is used in the permissive sense.
L. "Member of the college community" means any person who is a student, faculty member, college official or any other person employed by the college or center. A person's status in a particular situation shall be determined by the college president.
M. "Organization" means any number of persons who have complied with the formal requirements for college recognition.
N. "Policy" is defined as the written regulations of the college and/or District as found in, but not limited to, this Student Conduct Code and Governing Board policy.
O. "Shall" is used in the imperative sense.
P. "Student" means any person taking courses at the college whether full-time or part-time. Persons who are not officially enrolled for a particular term but who have a continuing relationship with the college are considered "students."
Q. "Student Conduct Administrator" means a college official authorized on a case by case basis by the college official responsible for administration of the Student Conduct Code to impose sanctions upon students found to have violated this Student Conduct Code. A Student Conduct Administrator may serve simultaneously as a Student Conduct Administrator and the sole member or one of the members of a Student Conduct Board. The college official responsible for administration of the Student Conduct Code may authorize the same Student Conduct Administrator to impose sanctions in all cases.
R. "Student Conduct Board" means any person or persons authorized by the college president to determine whether a student has violated this Student Conduct Code and to recommend sanctions that may be imposed when a violation has been committed.
S. "Threatening behavior" means any written or oral statement, communication, conduct or gesture directed toward any member of the college community, which causes a reasonable apprehension of physical harm to self, others or property. It does not matter whether the person communicating the threat has the ability to carry it out, or whether the threat is made on a present, conditional or future basis.

Article II: Judicial Authority

A. The college official responsible for administration of the Student Conduct Code shall determine the composition of Student Conduct Board and determine which Student Conduct Administrator, Student Conduct Board, and appellate board shall be authorized to hear each case.
B. The college official responsible for administration of the Student Conduct Code shall develop procedures for the administration of the judicial program and rules for the conduct of hearings that are consistent with provisions of this Student Conduct Code.

C. Decisions made by a Student Conduct Board and/or Student Conduct Administrator shall be final, pending the normal appeal process.

Article III: Prohibited Conduct

A. Jurisdiction of the College

The Student Conduct Code shall apply to conduct that occurs on college or district premises, or at college- or district-sponsored activities that adversely affects the college community and/or the pursuit of its objectives. Each student shall be responsible for his/her conduct from the time of admission through the actual awarding of a degree, certificate, or similar indicator of completion of a course of study, even though conduct may occur before classes begin or after classes end, as well as during the academic year and during periods between terms of actual enrollment (and even if their conduct is not discovered until after a degree is awarded). The Student Conduct Code shall apply to a student's conduct even if the student withdraws from school while a disciplinary matter is pending.

B. Temporary Removal of Student

Disruptive behavior includes conduct that distracts or intimidates others in a manner that interferes with instructional activities, fails to adhere to a faculty members appropriate classroom rules or instructions, or interferes with the normal operations of the college. Students who engage in disruptive behavior or threatening behavior may be directed by the faculty member to leave the classroom or by the college official responsible for administration of the Student Conduct Code to leave the college premises. If the student refuses to leave after being requested to do so, college safety may be summoned. For involuntary removal from more than one class period, the faculty member should invoke the procedures prescribed in the Student Conduct Code.

C. Conduct - Rules and Regulations

Any student found to have committed the following misconduct is subject to the disciplinary sanctions outlined in Article IV:

1. Acts of dishonesty, including but not limited to the following:
   a. Furnishing false information to any college official, or office.
   b. Forgery, alteration or misuse of any college document, record or instrument of identification.
   c. Tampering with the election of any college-recognized student organization.
2. Obstruction of teaching, research, administration, disciplinary proceedings or other college activities, including its public service functions on campus, in clinical settings or other authorized non-college activities, when the conduct occurs on college premises. A faculty member may remove a student from a class meeting for disciplinary reasons. If a faculty member removes a student for more than one class period, the faculty member shall notify the college official responsible for administration of the Student Conduct Code in writing of the problem, action taken by the faculty member, and the faculty member's recommendation. If a resolution of the problem is not reached, the student may be removed permanently pursuant to appropriate due process procedures.
3. Physical abuse, verbal abuse, threats, intimidation, harassment, coercion, conduct which threatens or endangers the health or safety of any person, and/ or disruptive behavior as defined in Article II.B. above.

4. Attempted or actual theft of and/or damage to property of the college or property of a member of the college community or other personal or public property.
5. Failure to comply with direction of college officials or law enforcement officers in the performance of their duties and/or failure to identify oneself to these persons when requested to do so.
6. Unauthorized possession, duplication or use of keys to any college premises, or unauthorized entry to or use of college premises.
7. Violation of any college or District policy, rule or regulation published in hard copy such as a college catalog, handbook, etc. or available electronically on the college's or district's website.
8. Violation of federal, state or local law.
9. Use, possession, manufacturing or distribution of illegal or other controlled substances except as expressly permitted by law.
10. Illegal use, possession, manufacturing or distribution of alcoholic beverages or public intoxication.
11. Illegal or unauthorized possession of firearms, explosives, other weapons, or dangerous chemicals on college premises or use of any such item, even if legally possessed, in a manner that harms, threatens, causes fear to others, or property damage.
12. Participation in a demonstration, riot or activity that disrupts the normal operations of the college and infringes on the rights of other members of the college community; leading or inciting others to disrupt scheduled and/or normal activities within any college building or area.
13. Obstruction of the free flow of pedestrian or vehicular traffic on college premises or at college sponsored or supervised functions.
14. Conduct that is disorderly, lewd or indecent; breach of the peace; or aiding, abetting or procuring another person to breach the peace on college premises or at functions sponsored by or participated in by the college or members of the academic community. Disorderly conduct includes but is not limited to: any unauthorized use of electronic or other devices or to make an audio or video record of any person while on college or district premises without his/her prior knowledge, or without his/her effective consent or when such a recording is likely to cause injury or distress. This includes, but is not limited to, secretly taking pictures of another person in a gym, locker room, or restroom.
15. Attempted or actual theft or other abuse of technology facilities or resources, including but not limited to:
    a. Unauthorized entry into a file, to use, read or change the contents or for any other purpose
    b. Unauthorized transfer of a file
    c. Unauthorized use of another individual's identification and/or password
    d. Use of technology facilities or resources to interfere with the work of another student, faculty member or college official
    e. Use of technology facilities or resources to send obscene or abusive messages
    f. Use of technology facilities or resources to interfere with normal operation of the college technology system or network

g. Use of technology facilities or resources in violation of copyright laws

h. Any violation of the district's technology resource standards

i. Use of technology facilities or resources to illegally download files.

16. Abuse of the student conduct system, including but not limited to:

a. Falsification, distortion or misrepresentation of information before a Student Conduct Board

b. Disruption or interference with the orderly conduct of a Student Conduct Board proceeding

c. Invoking a student conduct cod proceeding with malicious intent or under false pretenses

d. Attempting to discourage an individual's proper participation in, or use of, the Student Conduct system

e. Attempting to influence the impartiality of the member of a judicial body prior to, and/or during the course of, the Student Conduct Board proceeding

f. Harassment, either verbal or physical, and/or intimidation of a member of a Student Conduct Board prior to, during and/or after a Student Conduct Board proceeding

g. Failure to comply with the sanctions imposed under this Student Conduct Code

h. Influence or attempting to influence another person to commit an abuse of the Student Conduct Code system

i. Failure to obey the notice from a Student Conduct Board or college official to appear for a meeting or hearing as part of the Student Conduct System.

17. Engaging in irresponsible social conduct.

18. Attempt to bribe a college or District employee.

19. Stalking behavior, which occurs if a student intentionally or knowingly maintains visual or physical proximity toward another person on two or more occasions over a period of time and such conduct would cause a reasonable person to fear for his or her safety.

D. Violation of Law and College Discipline

1. Disciplinary proceedings may be instituted against a student charged with conduct that potentially violates both the criminal law and this Student Conduct Code (that is, if both possible violations result from the same factual situation) without regard to pending civil or criminal litigation. Proceedings under this Student Conduct Code may be carried out prior to, simultaneously with, or following civil or criminal proceedings off campus at the discretion of the college official responsible for administration of the Student Conduct Code. Determinations made or sanctions imposed under this Student Conduct Code shall not be subject to change because criminal charges arising out of the same facts giving rise to violation of college rules were dismissed, reduced, or resolved in favor of or against the criminal law defendant.

2. When a student is charged by federal, state or local authorities with a violation of law, the college will not request or agree to special consideration for that individual because of his or her status as a student. If the alleged offense is also being processed under this Student Conduct Code, however, the college may advise off campus authorities of the existence of this Student Conduct Code and of how such matters will be handled internally within the college community. The college will cooperate fully with the law enforcement and other agencies in the enforcement of criminal law on campus and in the conditions imposed by criminal courts for the rehabilitation of student violators. Individual students and faculty members, acting within their personal capacities, remain free to interact with governmental representatives as they deem appropriate.

Article IV: Student Conduct Code Procedures

A. Charges and Student Conduct Board Hearings

1. Any member of the college community may file charges against student for violations of this Student Conduct Code. A charge shall be prepared in writing and directed to the Student Conduct Administrator. Any charge should be submitted as soon as possible after the event takes place, preferably within thirty (30) days following the incident.

2. The Student Conduct Administrator may conduct an investigation to determine if the charges have merit and/or if they can be disposed of administratively by mutual consent of the parties involved on a basis acceptable to the Student Conduct Administrator. Such disposition shall be final and there shall be no subsequent proceedings. If the charges are not admitted and/or cannot be disposed of by mutual consent, the Student Conduct Administrator may later serve in the same matter as the Student Conduct Board or a member thereof. If the student admits violating institutional rules, but sanctions are not agreed to, subsequent process, including a hearing if necessary, shall be limited to determining the appropriate sanction(s).

3. All charges shall be presented to the accused student in written form. A time shall be set for a Student Conduct Board hearing, not less than five (5) nor more than fifteen (15) days after the student has been notified. Maximum time limits for scheduling of Student Conduct Board hearings may be extended at the discretion of the Student Conduct Administrator.

4. Hearings shall be conducted by a Student Conduct Board according to the following guidelines, except as provided by Article IV.A.7 below:

a. Student Conduct Board hearings normally shall be conducted in private.

b. The complainant, accused student and their advisors, if any, shall be allowed to attend the entire portion of the student conduct board hearing at which information is received (excluding deliberations). Admission of any person to the hearing shall be at the discretion of the Student Conduct Board and/or its Student Conduct Administrator.

c. In Student Conduct Board hearings involving more than one accused student, the Student Conduct Administrator, in his or her discretion, may permit the Student Conduct Board hearing concerning each student to be conducted either separately or jointly.

d. The complainant and the accused shall have the right to be assisted by any advisor they choose, at their own expense. The advisor must be a member of the college community and may not be an attorney. Both the complainant and the accused are responsible for presenting their own information and, therefore, advisors are not permitted to speak or participate

directly in any Student Conduct Board hearing before a Student Conduct Board.

e. The complainant, the accused student, and the Student Conduct Board may arrange for witnesses to present pertinent information to the Student Conduct Board. The college will try to arrange the attendance of possible witnesses who are members of the college community, if reasonably possible, and who are identified by the complainant and/or accused student at least two days prior to the Student Conduct Board hearing. Witnesses will provide information to and answer questions from the Student Conduct Board. Questions may be suggested by the accused student and/or complainant to be answered by each other or by other witnesses. This will be conducted by the Student Conduct Board with such questions directed to the chairperson, rather than to the witness directly. This method is used to preserve the educational tone of the hearing and to avoid creation of an adversarial environment. Questions of whether potential information will be received shall be resolved in the discretion of the chairperson of the Student Conduct Board.

f. Pertinent records, exhibits, and written statements may be accepted as information for consideration by a Student Conduct Board at the discretion of the chairperson.

g. All procedural questions are subject to the final decision of the chairperson of the Student Conduct Board.

h. After the portion of the Student Conduct Board hearing concludes in which all pertinent information has been received, the Student Conduct Board shall determine (by majority vote if the Student Conduct Board consists of more than one person) whether the accused student violated the section of this Student Conduct Code which the student is charged with violating.

i. The Student Conduct Board's determination shall be made on the basis of whether it is more likely than not that the accused student violated this Student Conduct Code.

5. There shall be a single verbatim record, such as a tape recording, of all Student Conduct Board hearings before a Student Conduct Board (not including deliberations). The record shall be the property of the District.

6. No student may be found to have violated this Student Conduct Code because the student failed to appear before a Student Conduct Board. In all cases, the evidence and support of the charges shall be presented and considered.

7. The Student Conduct Board may accommodate concerns for the personal safety, well-being, and/or fears of confrontation of the complainant, accused student, and/or other witness during the hearing by providing separate facilities, by using a visual screen, and/or by permitting participation by telephone, videophone, closed circuit television, video conferencing, videotape, audio tape, written statement, or other means, where and as determined in the sole judgment of the college official responsible for administration of the Student Conduct Code.

B. **Sanctions**

1. The following sanctions may be imposed upon any student found to have violated the Student Conduct Code:

a. **Warning** - a written notice to the student that the student is violating or has violated institutional rules or regulations.

b. **Probation** - a written reprimand for violation of specified rules or regulations. Probation is for a designated period of time and includes the probability of more severe disciplinary sanctions if the student is found to violate any institutional rules or regulation(s) during the probationary period.

c. **Loss of Privileges** - denial of specified privileges for a designated period of time.

d. **Restitution** - compensation for loss, damage or injury. This may take the form of appropriate service and/or monetary or material replacement.

e. **Discretionary Sanctions** - work assignments, essays, service to the college, or other related discretionary assignments. (Such assignments must have the prior approval of the Student Conduct Administrator.)

f. **College Suspension** - separation of the student from all colleges in the District for a definite period of time, after which the student is eligible to return. Conditions for readmission may be specified.

g. **College Expulsion** - permanent separation of the student from all the colleges in the District.

2. More than one of the sanctions listed above may be imposed for any single violation.

3. Other than college expulsion, disciplinary sanction shall not be made part of the student's academic record, but shall become part of the student's disciplinary record. Upon graduation, the student's disciplinary record may be expunged of disciplinary actions upon the student's application to the Student Conduct Administrator. Cases involving the imposition of sanctions other than suspension or expulsion shall be expunged from the student's confidential record five (5) years after final disposition of the case.

    In situations involving both an accused student(s) (or group or organization) and a student(s) claiming to be the victim of another student's conduct, the records of the process and of the sanctions imposed, if any, shall be considered to be the education records of both the accused student(s) and the student(s) claiming to be the victim because the educational career and chances of success in the college community of each may be impacted.

4. The following sanctions may be imposed upon groups or organizations:

a. Those sanctions listed above in Article IV B 1. a through d.

b. Loss of selected rights and privileges for a specified period of time.

c. Deactivation – loss of all privileges, including college recognition for a designated period of time.

5. In each case in which a Student Conduct Board determines that a student and/or group or organization has violated the Student Conduct Code, the sanction(s) shall be determined and imposed by the Student Conduct Administrator. In cases in which persons other than, or in addition to, the Student Conduct Administrator have been authorized to serve as the Student Conduct Board, the recommendation of the Student Conduct Board shall be considered by the Student Conduct Administrator in determining and imposing sanctions. The Student Conduct Administrator is not limited to sanctions

recommended by members of the Student Conduct Board. Following the Student Conduct Board hearing, the Student Conduct Board and the Student Conduct Administrator shall advise the accused student, group and/or organization (and a complaining student who believes s/he was the victim of another student's conduct) in writing of its determination and of the sanction(s) imposed, if any.

C. **Emergency Suspension**

If a student's actions pose an immediate threat or danger to any member of the college community or the educational processes, a college official responsible for administering the Student Conduct Code may immediately suspend or alter the rights of a student pending a Student Conduct Board hearing. Scheduling the hearing shall not preclude resolution of the matter through mediation or any other dispute resolution process. The decision will be based on whether the continued presence of the student on the college campus reasonably poses a threat to the physical or emotional condition and well-being of any individual, including the student, or for reasons relating to the safety and welfare of any college property, or any college function.

In imposing an emergency suspension, the college official responsible for administration of the Student Conduct Code may direct that the student immediately leave the college premises and may further direct the student not to return until contacted by that official. An accused student shall be in violation of this policy regardless of whether the person who is the object of the threat observes or receives it, as long as a reasonable person would interpret the communication, conduct or gesture as a serious expression of intent to harm.

D. **Appeals**

1. A decision reached by the Student Conduct Board judicial body or a sanction imposed by the Student Conduct Administrator may be appealed by accused students or complainants to an Appelate Board within five (5) days of receipt of the decision. Such appeals shall be in writing and shall be delivered to the Student Conduct Administrator.

2. Except as required to explain on the basis of new information, an appeal shall be limited to the review of the verbatim record of the Student Conduct Board hearing and supporting documents for one or more of the following purposes:

    a. To determine whether the Student Conduct Board hearing was conducted fairly in light of the charges and information presented, and in conformity with prescribed procedures giving the complainant a reasonable opportunity to prepare and present information that the Student Conduct Code was violated, and giving the accused student a reasonable opportunity to prepare and to present a response to those allegations. Deviations from designated procedures will not be a basis for sustaining an appeal unless significant prejudice results.

    b. To determine whether the decision reached regarding the accused student was based on substantial information, that is, whether there were facts in the case that, if believed by the fact finder, were sufficient to establish that a violation of the Student Conduct Code occurred.

    c. To determine whether the sanction(s) imposed was appropriate to the violation of the Student Conduct Code which the student was found to have committed.

    d. To consider new information, sufficient to alter a decision, or other relevant facts not brought out in the original hearing, because such information and/or facts were not known to the person appealing at the time of the original Student Conduct Board hearing.

3. If an appeal is upheld by the appellate board, the matter shall be returned to the original Student Conduct Board and Student Conduct Administrator for reopening of the Student Conduct Board hearing to allow reconsideration of the original determination and/or sanction(s). If an appeal is not upheld, the matter shall be considered final and binding upon all concerned.

Article V: Interpretation and Revision

Any question of interpretation regarding the Student Conduct Code shall be referred to the college official responsible for administration of the Student Conduct Code for final determination.

Student Records (2.5.3)

A. **Definitions**

For the purposes of this policy, the Maricopa County Community College District has used the following definition of terms.

1. "College" includes all colleges, educational centers, skill centers and District office.

2. "Educational Records" are any record (in handwriting, print, tapes, film, or other media) maintained by the college or an agent of the college which is directly related to a student, except:

    a. A personal record kept by a staff member, if it is kept in the personal possession of the individual who made the record, and information contained in the record has never been revealed or made available to any other person except the maker's temporary substitute

    b. An employment record of an individual whose employment is not contingent on the fact that he or she is a student, provided the record is used only in relation to the individual's employment

    c. Records maintained by the college's security unit, if the record is maintained solely for law enforcement purposes, is revealed only to law enforcement agencies of the same jurisdiction and the security unit does not have access to education records maintained by the community college

    d. Alumni records which contain information about a student after he or she is no longer an attendant of the community college and the records do not relate to the person as a student.

B. **Records Request**

Official verification of educational records is issued by the Admissions and Records Office/Office of Student Enrollment Services.

C. **Fees**

If a copy(ies) of a portion or all of the records in a student's file is requested, the custodian of the records may charge a fee for copies made. However, the willingness or ability to pay the fee will not effectively prevent students from exercising their right to inspect and review (under supervision of a college employee) their records. A fee will not be charged to search for or to retrieve records. Standard fees for printing and duplication services will apply.

D. **Annual Notification**

Students will be notified of their further rights annually by

publication in the college catalog and/or the student handbook: Rights of Access to Educational Records: The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights are:

1. **The right to inspect and review the student's education records within 45 days of the day the college receives a request for access.** Students should submit to the college admissions and records department written requests that identify the record(s) they wish to inspect. The college official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the college official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

2. **The right to request the amendment of the student's education records that the student believes to be inaccurate or misleading.** Students may ask the college to amend a record that they believe is inaccurate or misleading. They should write the college official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the college decides not to amend the record as requested by the student, the college will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. **The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.**

   One exception, which permits disclosure without consent, is disclosure to school officials with legitimate educational interest. A school official is defined as a person employed by the college or District in an administrative, supervisory, academic, or support staff position (including law enforcement unit and health staff); a person or company with whom the college or District has contracted (such as an attorney, auditor, or collection agent); a person serving on the Governing Board; or a person assisting another school official in performing his or her tasks.

   A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

   Upon request, the college discloses education records without consent to officials of another school in which a student seeks or intends to enroll.

4. **The right to file a complaint with the US Department of Education concerning alleged failures by the college to comply with the requirements of FERPA.** The name and address of the Office that administers FERPA is:
   Family Policy Compliance Office
   US Department of Education
   400 Maryland Ave., S.W.
   Washington, DC 20202-4605

E. **Student Directory**
   A Maricopa community college may release directory information about any student who has not specifically requested the withholding of such information. Students who do not want directory information released may so indicate during the admissions process or notify the Office of Admissions and Records.

   At any Maricopa community college, directory information is defined as a student's name, address, telephone number, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, degrees and awards received, dates of attendance, part-time or full-time status, most recent previous educational agency or institution attended by the student, college within the Maricopa Community Colleges where the student has been enrolled, photograph of student, and electronic mail address.

F. **Use of Educational Records for Advisement Purposes**
   All colleges within the Maricopa Community Colleges have access to the computerized degree audit program. During the advisement process, each student may have his or her academic record reviewed for coursework taken at any of the District's colleges or centers. The institution retains the right to exercise discretion in determining the release of directory information.

G. **Disclosure to Parents**
   In accordance with federal law, college officials may disclose educational records to parents of minors or to parents of a student who have established the student's status as a dependent according to the Internal Revenue Code of 1986, section 152, without the written consent of the student.

Student Employment (AR 2.5.4)

A. **District Student Employees**
   1. **Introduction**
      Students may be employed by the college as student help. District regulations require that students be hired in essential jobs and that they be properly trained and supervised.
   2. **Philosophy and Workload for Student Employees**
      a. It shall be the philosophy of Maricopa Community College District that a student may work to augment college and living expenses, however, the scholastic endeavor should be foremost. Sufficient time should be allotted for classroom attendance, homework, out-of-class study and participation in activities.
      b. A workload of twenty (20) hours per week should be established as the maximum number of hours a student employee may work on campus. All student employees shall be enrolled in a minimum of three (3) semester credit hours. Any combination of day and evening hours would meet this requirement. Any student employee having special reasons to work over 20 hours per week or having dropped below three (3) credit hours should request his/her immediate supervisor to obtain approval from the college president or his/her designee.
      c. During the summer sessions, students may be eligible for employment if they were enrolled for a minimum of three (3) semester credit hours at the end of the spring semester, or if they have been accepted for admission for the fall semester. Exceptions to the three (3) semester credit hours may be made by the president, or his/her designee. Summer shall be designated as the time from the official end of the spring semester to the beginning of classes for the fall semester.

as officers. The persons filling those positions shall be referred to, in this document, as officers. Persons filling all other positions, elected or appointed, shall be referred to as members (excluding non-voting committee members).

All positions filled by election shall be considered as elected positions, even though the person filling the position may have been appointed to fill an unexpired term of another individual.

B. **Designation**
Colleges with two (2) student governments shall designate the governments as "day" or "evening." Colleges with one (1) government shall be considered day students, for the purposes of this document.

C. **Eligibility for Office**
All student governance constitutions shall prescribe that all person selected or appointed as officers shall be enrolled in and maintain a minimum of six (6) credit hours for day student governments, three (3) credit hours for evening student governments. Officers shall have and maintain a minimum cumulative grade point average of 2.50 and be in good standing (not on probation) according to the written district policy. Convicted felons shall be ineligible for office (ARS §13-904). The constitution may, however, set more rigid requirements, if so desired by college student governance.

D. **Tenure of Position**
Tenure in any student governance position shall be determined by the respective student governance constitutions. In no case shall any student be allowed to serve in any combination of officer/member positions beyond a total of ten (10) semesters. Tenure in any combination of officer positions shall be limited to four (4) semesters.

E. **Removal from Office**
Provisions shall be made in all student governance constitutions for removal for cause of individuals from elected or appointed student governance positions.

F. **Remuneration Limitations**
1. Student body officers may receive financial support and/or a letter grade in a leadership class during their terms of office as authorized in their respective student governance constitutions. Student body officers (maximum 5) may receive up to twenty (20) hours per week in financial support and/or up to six (6) credit hours in leadership classes per semester. Remuneration shall be for services rendered and not for merely holding the office.
2. For qualifying students, Federal Work Study (FWS) funds may be used in accordance with Federal guidelines.
3. The allowance for awarding honorariums or scholarships for executive student officers is a maximum of $200.00.
4. Compensation may be received for both honorariums/scholarships and college employment in the same semester.

G. **Amending Student Constitutions**
College student constitutions should be reviewed annually by student governance. The appropriate vice president or designee of each college shall be responsible for submitting any constitutional changes to the president of the college for transmittal to the Governing Board General Counsel.

H. **Student Governance Advisors**
College organization advisors will be provided for in each student governance constitutions. Such advisors shall be full-time or part-time employees of the Maricopa Community Colleges.

Recommendations for appointment of an advisor may be submitted to the appropriate vice president or college president. Recommendations for dismissal of an advisor with just cause may be submitted to the appropriate vice president or college president.

I. **Legal/Fiscal/Financial Matters**
Authority and responsibility beyond the scope specifically covered in student policies, or interpretation of such matters within laws, board policies, etc. shall rest with the offices of General Counsel and Chancellor, respectively.

J. **Final Authority**
In the event of a complete breakdown of the governance body, the college president will serve as the final authority.

Consensual Relationships (AR 4.18)

I. General
The existing Governing Board Policy on Hiring of Relatives prohibits employees from being involved in any employment or key decision that involves a relative. This would include work performance, job assignments, or pay related matters. In that such relationships can create a conflict with the interests of the Maricopa Community Colleges, and the increased potential for nepotism and favoritism, the same principles also apply in the case of consensual amorous, romantic and/or sexual relationships that occur between employees or between employees and students.

In the work and academic environment, such a relationship that might be appropriate in other circumstances is inappropriate if one of the individuals in the relationship has a professional responsibility toward, or is in a position of authority with respect to, the other, such as in the context of supervision, instruction, coaching, counseling or advisement. An element of power is present in such a context and it is incumbent upon those with authority not to abuse that power. In addition, consensual relationships may yield to third parties the appearance that unfair bias or favoritism towards the student or supervisee is taking place.

A. Definitions
1. **Consensual relationships** are defined as romantic, amorous and/or sexual relationships between consenting employees or between employees and adult (18 years or older) college students currently enrolled at one of the community colleges.
2. An **employee** is any individual who is employed by the Maricopa County Community College District (MCCCD). An employee includes an individual who is subject to an established employee job group policy manual, whether regular, full-time board approved, at-will, part-time, and/or temporary. An employee also includes a contract worker (special services employment, request for personnel services) working or serving as an agent or designee on behalf of the MCCCD.
3. A **student** is considered to be any person currently enrolled in a credit or non-credit class at one of the colleges or centers within the Maricopa County Community College District.
4. A **vendor** is someone who sells or can sell products or services to the Maricopa County Community College District.
5. A **recent** consensual relationship is considered to be one that has taken place within the past 24 months.

B. Prohibited Conduct

1. An employee shall not maintain, engage in or be involved in a consensual relationship with another employee who is subject to that individual's supervision or with a student that is currently enrolled in the individual's class, or a student whom the individual otherwise instructs, coaches, counsels or advises, or with a vendor if the employee manages that contract or otherwise exerts influence over the contract.

2. The Governing Board recognizes that the personal life of its employees is not a concern of the institution, and therefore, this regulation does not seek to prohibit romantic relationships that exist between parties where the context of power-authority between employees or between employees and students is not present; and provided that the relationship does not affect the employee's effectiveness in fulfilling his or her professional obligation. For these instances, appropriate measures should still be taken in order to avoid conflicts of interest from occurring. For relationships that may exist prior to the time that either a student or employee is placed in a situation of instruction or supervision that is considered to be a conflict of interest, the employee(s) involved shall disclose and take immediate measures to avoid the conflict or appearance of conflict.

II. Procedures for Disclosure

Employees should first avoid allowing an inappropriate consensual, amorous or sexual relationship to develop with a supervisee or student.

A. Where the employee is already in or has had a recent consensual relationship with a supervisee, the following procedures shall be followed:

1. Immediate disclosure by the employee of the relationship to their supervisor and to the appropriate Vice President or Vice Chancellor in order to ensure that any conflicts of interest have been adequately addressed.

2. The respective administrator responsible for the department or division shall place the subordinate under alternate supervision when a supervisor under his/her direction has or has had a recent consensual relationship with the employee.

3. The supervisor shall recuse himself or herself from any discussions or involvement with decisions related to evaluations, promotion, hiring, determination of salary, or continuation of contract or employment.

4. The respective Vice President or Vice Chancellor shall prepare and retain a report that specifies the appropriate alternate arrangements that have been made to eliminate the conflict of interest. The EEO/AA Office shall be provided a copy of the report along with the employees involved in the relationship.

B. Where the employee is already in or has had a recent consensual relationship with a student prior to enrollment in his or her class, the following procedures shall be followed:

1. The faculty member shall counsel and advise the student not to enroll in his or her course.

2. The Consensual Relationships Policy will be made available to students via the student handbook and other appropriate communications vehicles.

3. If it is not possible for a student to enroll in another course, section, or course and section at another college due to a requirement for completion of a degree or certificate and no other academic option is available, disclosure of the relationship will be made to the appropriate Department Chair, Dean and Vice President of Academic Affairs or Vice President for Student Affairs as appropriate for review. The Vice President will refer the matter to the Vice Chancellor for Academic and Student Affairs for consideration. The Chancellor or his/her designee may allow a student to enroll in the class only upon a showing by the student that the enrollment is necessary to avoid an extreme hardship, and upon a showing by the college President or designee that the academic integrity of the student's enrollment in the class will nevertheless be maintained.

III. Persons who are married, or were married, are included within the definition of persons that have or who have had a consensual amorous relationship. Disclosure in this instance may be made via the Maricopa Disclosure process at **www.maricopa.edu/ disclosure/.**

IV. An employee who fails to follow the requirements established in this policy and who does not withdraw from participation in activities or decisions that may reward or penalize a supervisee or student with whom the employee has or has had a recent consensual amorous relationship, will be considered in violation of policy and will be addressed in accordance with established processes in job group policy manuals.

Administration

Maricopa Community Colleges
Administration

Dr. Rufus Glasper.. Chancellor
Dr. Maria Harper-Marinick................................. ...Vice Chancellor
Dr. Steven Helfgot... .... Vice Chancellor
Ms. Nikki R. Jackson .... Vice Chancellor
Mr. George Kahkedjian .... Vice Chancellor
Ms. Debra Thompson... .... Vice Chancellor

Governing Board

Mr. Randolph Elias Lumm.. President
Mr. Doyle W. Burke .... Secretary
Dr. Donald R. Campbell.. Member
Mrs. Debra Pearson... Member
Mr. Dana G. Saar .... Member

College Presidents

Dr. Linda Lujan ....Chandler/Gilbert Community College
Dr. Ernie Lara ....Estrella Mountain Community College
Dr. Eugene Giovannini .... GateWay Community College
Dr. Irene H. Kovala............................ Glendale Community College
Dr. Shouan Pan .... Mesa Community College
Dr. Paul Dale ....Paradise Valley Community College
Dr. Anna Solley.. Phoenix College
Dr. Chris Bustamante.......................Rio Salado Community College
Dr. Jan L. Gehler............................. Scottsdale Community College
Dr. Shari Olson ....South Mountain Community College

GateWay Community College Administration

Giovannini, Eugene   President
B.S., Bloomsburg University
M.Ed., Bloomsburg University
Ed.D., Virginia Polytechnic Institute and State University

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B.S., Arizona State University
M.Ed., Ed.D., Northern Arizona University

Norby, Paula   Vice President of Academic Affairs
B.A., University of Montana
M.S., Central Washington University
Ed.D., Oregon State University

Muniz, Diana   Vice President of Student Affairs
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Ed.D., University of Michigan

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MAppSci, Ph.D., Monash University

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Ed.D., Nova Southeastern University

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M.S., Indiana University

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M.S., Ph.D., University of Arizona

Laehu, Ray   Supervisor, Maintenance

Lambrakis, Christine   Director, Marketing & Public Relations
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M.Ed., Arizona State University

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B.S., University of Phoenix

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M.A. Ottawa University

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B.S., Grand Canyon University

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B.A., Ottawa University

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M.T.E.S.O.L., Arizona State University

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M.S., Arizona State University

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M.Ed., Northern Arizona University

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B. S., Arizona State University
M.A.O.M., University of Phoenix

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M.B.A., Rice University

Shumard, Charles R.   Network Administrator
A.A.S., GateWay Community College

Starck, Brenda   Supervisor, Admissions, Registration &
A.A.S., Bismarck State College   Records
B.S., University of Montana

Taccone, Christine   Coordinator, Science Lab
B.A., Northern Arizona University

Velarde, Mark   College Budget Analyst
A.A., GateWay Community College
B.A., University of Phoenix

Faculty
One-Year-Only or Specially Funded position=*

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B.S.N., University of Arizona
M.S.N., Arizona State University

Austin, Steve   Psychology*
B.S., M.A., Arizona State University

Awad, Abdul   Biology
M.S., Utah State University
Ph.D., Louisiana State University

Baugh, James   Mathematics
B.S., United States Military Academy
M.N.S., Arizona State University
M.B.A., Long Island University
Ed.D., Arizona State University

Berdahl-Klug, Kirsten   Physical Therapist Assisting
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Bergin, Martha   Communication/Sociology
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B.A., Sonoma State University
M.A., Sacramento State University
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B.A., M.Ed., Northern Arizona University

Dodd, Bryan   Director, Diagnostic Medical Sonography
A.A.S., The George Washington University
B.S.E., Arizona State University

Dunn, Nancy   Nursing
B.F.A., B.S.N., Arizona State University
M.S.N., University of Phoenix

Edgar, Patricia   Chair, Business & Information Technologies Division
B.S., University of Phoenix
M.Ed., Northern Arizona University

Espiritu, Charo   Health Unit Coordinating
B.S.N, University of Santo Tomas, Phillipines

Fenske, Eric   Automotive Technology
A.A.S., GateWay Community College
B.S., Arizona State University

Fergusson, Jacqueline   Chemistry
B.Sc., (Chem.), University of London
Dip. Ed., University of the West Indies
M.Ed., Arizona State University
Ph.D., University of Nebraska

Folks, Steven   Automotive Technology
A.A.S., Central Arizona College
B.A.Ed., Arizona State University

Frimel, Theresa   Nursing
Diploma, Fairview Hospital School of Nursing
B.S.N., Bowling Green State University/Medical College of Ohio
M.S.N., University of Phoenix

Frost, Susan   Nursing
L.P.N., Maricopa Technical Community College
A.A., East Los Angeles College
A.A., Glendale Community College
B.S.N., B.S., Grand Canyon University
M.C, Arizona State University

Garcia, Yvette   Chair, Liberal Arts Division
B.A., M.Ed., Arizona State University

Garneau, Ashley   Nursing
A.A.S., GateWay Community College
B.A., Arizona State University
M.S., Northern Arizona University

Gerstman, David   Biology
B.A., Brooklyn College of the City University of New York
D.P.M., Ohio College of Podiatric Medicine

Goetz, Thomas   Director, Automotive Technology
A.A.S., Maricopa Technical Community College

Goodman, Jessica   Physical Therapist Assisting
D.P.T., Creighton University

Guarascio-Howard, Linda   Director, Occupational Safety & Health
B.S., Western Illinois University
M.S., Northern Illinois University
M.A., New York University
Ph.D., Arizona State University

Guemes, Michelle   Director, Production & Design Technology
B.S., University of Texas-Pan American

Hall, Donald   Humanities/Communication/Theatre
B.A., University of Michigan
M.A., Arizona State University

Harmann, Maria   Nursing
B.S.N., M.S.N., University of Phoenix

Healy, RaNae   Psychology
B.A., Brigham Young University
M.S., Eastern Washington University
Ph.D., Walden University

Heying-Stanley, Betty   Nursing Continuing Education
A.A., Rochester Community College
B.S.N., M.N., University of Phoenix
Ed.D., Argosy University

Hightower, Nicolle   Medical Radiography
A.A.S., GateWay Community College
B.S., D.M.I.T., Northern Arizona University

Hinski, Sandra   Respiratory Care
B.S., M.S., Georgia State University

Hoewing, Bonnie   Reading
B.A., M.A., University of Northern Iowa
Ph.D., University of Iowa

Hoskins, Edward   Chair, Health Sciences Division
A.A., Maricopa Technical Community College
B.A., Ottawa University
M.Ed., Northern Arizona University

Hoyle, Susan   Nuclear Medicine Technology
A.A.S., Ferris State College

Huffman, Vincent   Anthropology/Social Work
M.A., Ball State University

Hunter, Ferdinand   English
B.A., Emory University
M.F.A., Brown University

Hutchins, Heidi   Director, General Business
B.A., University of Utah
Honors B.A., University of Utah
M.H.S.A., M.B.A., Arizona State University

Jacobs, Julia   Director, Radiation Therapy
B.S., M.B.A., University of Phoenix

Johnson, Bradley   Medical Radiography
A.S., Rochester Community and Technical College
B.S., University of St. Francis
M.Ed., Northern Arizona University

Johnson, Nancy   Medical Radiography
A.A.S., Eastern Maine Vocational Technical Institute
B.A., Ottawa University
M.Ed., Northern Arizona University

Jolly, Matthew   Coordinator, English
B.A., Lycoming College
M.F.A., Arizona State University

Kang, Li   Library
M.L.S., M.A., University of South Florida
B.A., Shanxi Teachers' University, China

Kelly, John   Chair, Industrial Technology Division
B.A.E., M.Tech., Arizona State University

Kersten, Nancy   English as a Second Language
B.A., Moorehead State College
M.A., Arizona State University
Certificate of Theological Studies, Pacific School of Religion

Komlodi, Candace   Reading
B.S., Indiana University
M.Ed., University of Pittsburg
Ed.D., Northern Arizona University

Lampignano, John   Director, Center for Teaching & Learning
A.A., GateWay Community College
B.S., Weber State College
M.Ed., Arizona State University

Lastine, Jeri   Director, Practical Nursing
B.S.N., Winona State University
M.S.N., University of Phoenix

Luczu, Sharon   Director, Health Services Management/
                              Coordinator, Continuing Education
R.N., Presbyterian Hospital School of Nursing, N.J.
B.A., Jersey City State College, N.J.
M.Ed., Northern Arizona University
M.B.A., University of Phoenix

Lupo, Diane   Respiratory Care
B.A., Ottawa University

Lynch, Kathy   Department Chair, Library
B.A., Hartwick College
M.L.S., University of Arizona

Manzoeillo, Dale   Nursing
A.A.S.N., Morton College
B.S., National-Louis University
M.S.N., Rush University

May, Steven   Director, Cisco/Networking Technology
A.A.S., Glendale Community College

McConnell, Fionnuala   Nursing*

Melenovich, Peter   Nursing
A.A.S., GateWay Community College
B.S.N., M.S. Arizona State University

Mendoza-Moreno, Patricia   Nursing*
B.S.N., Arizona State University
M.S.N., University of Phoenix

Miholich, Barbara   Nursing
A.A.N., Weber State University
B.S.N., M.S.N., University of Phoenix

Mills, Susan   Art/Philosophy
B.F.A, University of Illinois Urbana Champaign
M.F.A., Southern Illinois University

Milner, Paula   Nursing
B.S.N., University of Cincinnati
M.S., Arizona State University

Nugent, Wendi   Director, Polysomnography Technology & EEG
A.A., Golden West Community College
Certification Electroneurodiagnostic Technology, Orange Coast College
M.B.A., Simmons School of Management

Ornelas, Linda   Nursing
B.S.N., University of North Dakota
M.S., Arizona State University

Patterson, Kathryn   Respiratory Care
A.S., Suffolk Community College
B.S., Northern Arizona University

Perry, Clyde   Director, HVAC/Facilities
B.S., University of Southern Maine
M.Ed., Ed.D., Northern Arizona University

Permoda, Linda   Nursing
B.S.N., D'Youville College
M.S.N., University of Phoenix

Prioreschi, Kathy   Director, Nurse Assisting
A.D.N., Mesa Community College
B.S.N., University of Phoenix

Rodriguez, Toni   Director, Respiratory Care
A.S. Allegheny Community College
B.S., University of Pittsburgh
M.Ed., Ed.D., Arizona State University

Rudibaugh, Evan   Mathematics*
A.A., A.A.S., A.G.S., Chandler-Gilbert Community College
B.S., Arizona State University
M.A., Thunderbird School of Global Management

Schultz, Margi   Director/Chair, Nursing Division
A.A.S., GateWay Community College
B.S.N., M.S.N., University of Phoenix
Ph.D., Capella University

Souders, Margaret   Assistant Director, Nursing
B.S.N., M.S., Arizona State University

Staples, James   HVAC/Facilities

Stover, Dean   English
B.A., M.F.A., Arizona State University

Stromer, Malka   Diagnostic Medical Sonography
B.S., York University
Dipl., Mohawk College
M.Ed., York University

Thiessen, Charlene   Director, Medical Transcription &
B.A., Ottawa University   Coordinator, Health Care Core
M.Ed., Northern Arizona University

Torrey, S. Annette   Business
B.A., Capital University
M.Ed., University of Dayton

Turner, Cheryl   Nursing
B.S.N., Webster University
M.S.N., Cambridge College

Van Houten, Donna   Nursing
B.S.N., M.S., Arizona State University

Versetto, Amelia (Amy)   Clinical Coordinator, Radiation Therapy*
B.S., Elmhurst College
M.Ed., University of St. Francis

Vrabel, Kerry   Instructional Design Facilitator &
      ESL as a Second Language
B.S., Benedictine University, Illinois
M.A., Hunter College of the City University of New York
M.Div., Maryknoll School of Theology, New York

Wadsworth-Seibel, Monica   Director, Health Unit Coordinating
B.S., Arizona State University
M.Ed., Northern Arizona University

Walker, Beth   Nursing*

Walker, Douglas   Mathematics
B.A., Saint Olaf College
M.S., Iowa State University

Wallen, Susan   Director, Hospital Central Services/
B.S.N., University of Arizona   Perioperative Nursing/
M.S., College of St. Francis   Surgical Technology

Walton, Mary   Nursing
B.S.N., University of Iowa
M.S., Ph.D., Arizona State University

Weide, Clarice M. — Biology
A.A., Joplin Junior College
B.S., Pittsburg State University, KS
M.S., Arizona State University

Wells, Cris — Director, Clinical Research Coordinating
B.S.R.T., Creighton University
B.S.E.E., Northern Arizona University
M.B.A., M.H.S.A., Arizona State University
Graduate Certificate of Completion, Educational Technology,
   DeVry University
M.S., Keller Graduate School of International Management
Ed.D., Northern Arizona University

Wright, James — Nursing
Diploma, Ona M. Wilcox School of Nursing
B.A. Mgt., M.S.N., University of Phoenix

Yena, Lauren — English
B.A., University of Miami
M.A., University of Florida
Ph.D., Arizona State University

Zamora, David — Production & Design Technology
A.A.S., Albuquerque Technical Vocational Institute
A.A.S., Mesa Community College
B.S., M.S., Arizona State University

Zamora, Frank — Department Chair, Counseling
B.S.W., Arizona State University
M.Ed., Northern Arizona University

Zanazzi, John — Information Technology
A.A.S., Mesa Community College
A.A.S., GateWay Community College
B.S., SUNY at Oneonkta State University
B.S., Excelsior College
M.A., Northern Arizona University

Zawicki, Peter — Director, Physical Therapist Assisting
B.S., University of Illinois
M.S., DePaul University

Zeka, Yvonne — Director, Title V
B.S., Northwest Missouri State University
M.S., Iowa State University

Zygowicz, Sharon — Counseling
B.A., M.C., Ph.D., Arizona State University

Faculty Emeritus

Backus, Alex S. (1972-2005) — Medical Radiography
B.S., Alderson-Broaddus College
M.S., State University of New York at Buffalo

Counts, Willie R. (1978-2008) — Psychology
B.S., University of Arizona
Ph.D., Arizona State University

Fenske, Marie A. (1986-2009) — Respiratory Care
A.A.S., Kirkwood Community College
B.S., M.S., Ed.D., Arizona State University

Lucius, Catherine (1982-2008) — Nursing
B.S.N., M.S., Arizona State University

Rasmussen, Geraldine A. (1980-2008) — Liberal Arts
A.A., GateWay Community College
B.A., M.Ed., Arizona State University

Shay, Gail (1987-2008) — Spanish/ESL/Communication
B.A., College of Wooster
M.A., Arizona State University

Support Staff

Administrative Offices
Micola, Diana B. ....Administrative Assistant to College President
Hoang, Lan ....Administrative Assistant I
Welsh, Bonnie ....Administrative Assistant I

Business & Industry Apprenticeship Programs
Gonzalez, Maribel ....Administrative Assistant I

Business & Industry Training
Styles, Dina ....Administrative Assistant I

Facilities
Aguirre, Roselinda..Custodian I
Amparan, Octavio.. Groundskeeper I
Baca, Ernie...Custodian I
Blevins, Carl.. Groundskeeper I
Figueroa, Sergio..............................HVAC Maintenance Technician
Franco, Martine ....Electrician
Mandel, Linda..Administrative Secretary II
Merrifield, Mark.......................... Building Maintenance Technician
Montijo, Theodore..Groundskeeper II
Moss, Patrick..Custodian I
Powell, Dwayne...Lead Custodian I
Quintana, Manuel... Groundskeeper I
Sandoval, Abelardo...Custodian II
Solis, Frankie...Custodian I
Steck, Aaron..Custodian I
Wesolowski, Marty...Carpenter

Career Services

Brosilo, Jessica .... Office Coordinator I

Children's Learning Center

Campbell, Patricia ....Administrative Secretary III
Goto, Sayuri "Miko" .... Early Childhood Teacher II
Phillips, Tricia .... Early Childhood Teacher II

College Business Services/Fiscal

Arenas, Albert...................................... College Accounting Assistant
DeVoll, Karla ....Administrative Assistant I
Freeman, Mary.................................... College Accounting Assistant
Rose, Donna .... Fiscal Technician II

Enrollment Services

Alday, Teresa...Student Support Specialist
Bradley, Jennifer .... Coordinator, Student Services
Cameron, Joyce ....Administrative Assistant I
Cleveland, Betty ....Student Services Specialist
Cowan, Debra...Student Support Specialist
Delgado, Caroline ....Student Services Specialist
Engh, Heidi ....Student Services Specialist
Hancock, Julie........... Coordinator of Student Services, Financial Aid
Henderson, Irma ....Student Support Specialist
Hernandez, Tiffany ....Student Services Specialist
Herr, Marjorie....................................... Student Services Technician
Kelley, Lonna ....Student Services Specialist
Kirchner, Patricia.....................................Student Support Specialist
Lane, Betty...Student Services Specialist
Leitz, Sarah ....Coordinator, Student Success
Long, Carmel ....Student Support Specialist
Lough, Liliana ....Student Services Specialist
Lukian, Brian .... Student Services Technician
Major, Ruth ....Student Services Specialist
Mims, Christopher.......Coordinator of Student Services, Advisement
Nunez, Raeann..Student Services Specialist
Pritchard, Deanna ....Financial Aid Technician III
Pulgarin, Neomi......................................Administrative Secretary I
Rocha, Raymond.......................................Student Services Specialist
Romo, Andrea...Student Services Specialist
Rose, Angelina..Student Services Specialist
Silva, Enrique...Student Services Specialist
Simo, Tara..Student Support Specialist

IT/Media/Training/Help Desk

Davis, Kirk...Network Technician
Jagne, Abdoulie ....Network Technician
Lubovac, Senadz.............. AV Maintenance Technician/Photographer
Morris, Jeff...Network Technician
Pederson, Rebecca .... Helpdesk Analyst
Phillips, DeNean ....Network Technician
Serrano, Leo ....Network Technician
Starks, Jeremy...Network Technician
Tirpak, Margit.. Office Coordinator III
Willey, Benjamin..Network Technician

Instructional/Administrative Support

Begaye, Sheryl .... Curriculum Technician
Bejarano, Corina ....Administrative Secretary III,
.... Business & Information Technologies Division
Buri, Janey ....Administrative Assistant I,
.... Nursing Continuing Education
Cooper, Cindy ....Administrative Secretary II,
.... Counseling & Adult Re-entry
Cruz, Jenny ....Administrative Secretary III,
.... Math & Science Division
Felder, Mark... HVAC Lab Technician
Felix, Patricia "PK".....Administrative Secretary III, Nursing Division
Flatt, Kathy ....Science Lab Technician, Math & Science Division
Haas, Briana............................. Division Secretary/Program Advisor,
.... Industrial Technology Division
Mazur, Barbara.....................................Administrative Secretary III,
.... Health Sciences Division
Sargent, Carina..... Administrative Secretary III, Liberal Arts Division
Scott, Lina...........................Coordinator of Student Services, Title V
Sheldon, Laura ....Administrative Assistant I,
.... Health Sciences/Nursing
Strickler, William .... Office Coordinator III/Title V
Sullivan-German, Lori...................Lab Technician, Court Reporting
Sweet, Michael ....Automotive Lab Technician
Walton, Darshini.......................... Office Coordinator II/HIT Grant

Institutional Advancement/Marketing

Floyd, Christopher .... Student Services Technician
Martinez, Danny............................. Web Graphics Designer/Title V
Moore, Peggy .... Student Services Technician, Outreach Center
Oradat, Elena .... Lead Information Technician
Pace, Karla ....Administrative Secretary III
Quintero, Danel... Recruiter
Tse, Bill ....Office Coordinator III/Web/Photographer

Learning Center

Oliverio, Robert .... Learning Associate/Title V
Tuoy-Giel, William ....Student Services Specialist
Ulmer, Linda...Office Coordinator II

Library

Fedor, Scott...Library Assistant II
Frantz, Jeanette..Library Assistant II
Mueller-Swan, Carolyn.......................................Library Assistant II

Public Safety

Perryman, Victor..Dispatcher
Pietraz, David... Certified Safety Officer
Scarlett, Steven ....Lead Certified Safety Officer
Wackerfuss, Gerald.. Safety Officer

Student Assessment Center

Baxter, Tiffany... Testing Technician
Canada-Ford, Lisa .... Office Coordinator III

Student Life & Leadership

Johnson, Greg ....Athletic Specialist
Macias, Deborah ....Administrative Assistant I
Shabansky, Rob ....Athletic Specialist

Trio Programs: Student Support Services/ Upward Bound

Adams, Wendy ....Student Services Specialist
Clark-Dow, Helen .... Coordinator, Student Services
Prado, Amalia...Office Coordinator II
Washington, Ila ....Student Services Specialist

GateWay Early College High School

Administration

Lisa Smith   Early College Principal
B.S., Arizona State University
M.Ed., Northern Arizona University

Faculty

Blevins, Eric   Early College-Science
M.Ed, Arizona State University

Bracamontes, Maria   Early College-English
B.A., University of California, Irvine

Chamberlain, Michael   Early College-Social Studies
B.Sc., London School of Economics
M.Ed., University of Phoenix

Cullinan, Olenka   Early College-English
A.A., Tula State Teacher's Training University
B.A., Loras College
M.A., University of Arizona

Fair, Darnetta   Early College-Social Studies
B.A., Langston University
M.Ed., University of Phoenix

Filimon, Marina   Early College-Mathematics
B.S., Moscow Institute of Steel and Alloys, Russia
M.Ed., Arizona State University

Hawkes, Karen   Early College-English
B.A., University of Colorado
M.Ed., University of Phoenix

Johnson, Theresa   Early College-Science
B.S., Humboldt State

Mehall, Christopher "CJ"   Early College-Science
B.Sc., Eastern Illinois University
M.Ed., Northern Arizona University

Montanaro, Blaine   Early College-English
B.A., M.A., Arizona State University

Nunn, Mary   Early College- ELD
M.A. Northern Arizona University

Vingochea, Luis "Danny"   Early College-Mathematics
B.A., M.Ed., Arizona State University

Laurin, Joel   Early College-Counselor +
B.S.Ed, Southwestern University Director, Tech Prep/Federal Project
MC, University of Phoenix

Support Staff

Fresques, Audrey .... Counselor
Hill, Robert..Student Success Liaison
Lucero, Marilyn ....Attendance/Purchasing
Gusse, Julia ....Parent Program Coordinator
Rodriguez, Luz......................................Academic Support Assistant
Sandefur, Elizabeth.............. Coordinator of Admissions and Records

Pay for Printing

Q&A for Students

Students and community users will be charged for printing from college computers. Students will receive a $20 credit for the fiscal year (July 1-June 30). This will allow for 200 free pages.

How much does printing cost?

$0.10 per page for black-and-white copies; $1 per page for color at IKON in MA 1210.

Note: For community users, documents must be saved to a flash drive and taken to the IKON counter in MA 1210. See hours below.

IKON Hours
Fall & Spring Semester Hours
Monday - Thursday   7:00 a.m. - 7:00 p.m.
Friday   7:00 a.m. - 5:00 p.m.
Saturday - Sunday Closed

Summer Hours
Monday - Thursday   7:00 a.m. - 7:00 p.m.
Friday -Sunday Closed

How do I know how much credit or how many pages I have remaining?

After a print job is requested, the print assistant on the computer will calculate how much your print job will cost and display how much money you have remaining on your account. You will have two options: 1) continue to print, or 2) cancel the print request. Let the assistant finish calculating before you accept the charge to avoid mistakes in printing costs. If the cost of a print request exceeds the balance in your account, you will not be allowed to complete the print job.

How do I pay for printing after I use up my free printing?

Once you have used all your free prints, additional funds can be added to your GateWay MEID Fund Account.

How do I add money to my GateWay MEID Fund Account?

You add money to your account by visiting the Cashiers Office at GateWay Central in the SO Building. You may only add money to your account during the hours that the Cashiers Office is open:

Fall & Spring Semester Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Friday   8:00 a.m. - 5:00 p.m.
Saturday - Sunday Closed

Summer Hours
Monday - Thursday   8:00 a.m. - 7:00 p.m.
Friday - Sunday Closed

Will any unused money in my print account rollover or be refunded?

Unused funds in your print account cannot be rolled over or refunded at the end of the school year. Accounts will be cleared on July 1.

What do I do if the printer malfunctions?

If a school printer malfunctions, notify a staff member immediately. If a staff member cannot fix the problem, the student will be given a credit within 24 hours (the staff member will initiate the credit request). Staff cannot add funds to your account.

How can I reduce my costs or the amount that I print?

- Download information and save it to a USB drive.
- Save your downloaded file to an online storage provider, such as Box.net, 4shared.com, SnapDrive.net, humyo.com, ADrive.com, FreeDrive.com, etc.
- Email information to yourself; print at home or retain the file for reference.
- Email documents to professors or colleagues.
- Print only the pages you need, instead of the entire document.
- Preview what you are printing to ensure you only send the print job one time and are only printing what you need.

Pay-for-Print Benefits

- Increases life of campus printers
- Ensures working and reliable printers
- Improves management of printing services
- Significantly reduces waste (paper and toner)
- All funds are placed back into the program for printer maintenance, paper and toner.

I n d e x

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V

W

GateWay
Community College

108 N. 40th Street • Phoenix, AZ 85034
(602) 286-8000 • www.gatewaycc.edu

AF	Administrative/Faculty Offices
AT	Amphitheatre
AU	Automotive Center
CC	Childrens Learning Center
CH	Center for Health Careers Education
CP	Central Plant
EA	Electrical Apprenticeship Lab
MA	Main Building
PS	Public Safety
SO	South Building

Construction site is future location for Integrated Education Building and Campus Incubator.

See http://blend. gatewaycc.edu/blogs/ buildingprojects/de- fault.aspx

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METRO Park-and-Ride
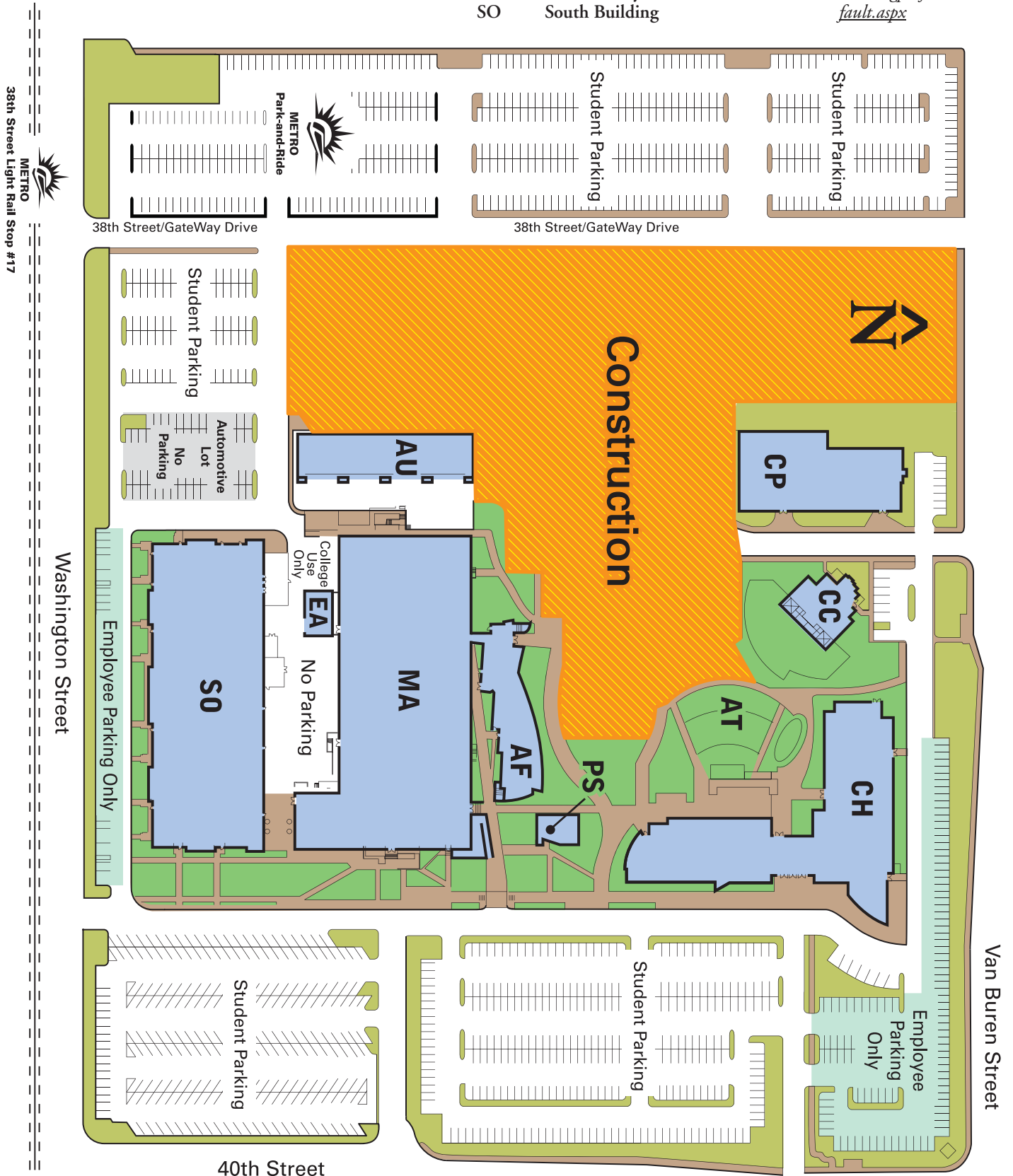
METRO 38th Street Light Rail Stop #17

Student Parking

Student Parking

38th Street/GateWay Drive

38th Street/GateWay Drive

N

Construction

CP

Student Parking

Automotive Lot No Parking

AU

CC

College Use Only

EA

Washington Street

Employee Parking Only

SO

No Parking

MA

AF

PS

AT

CH

Student Parking

Student Parking

Employee Parking Only

Van Buren Street

40th Street