

Estrella Mountain offers a variety of courses which meet certificate and degree requirements. Course offerings are continuously expanding—a sampling of new courses includes CIS119DP Oracle Database Administration, CIS120DB Computer Graphics: Adobe Illustrator, CIS126AL Linux Operating Systems, CIS151 Introduction to Game Development, CIS251 Advanced Game Development I, CIS253 Advanced Game Development II, SOC212 Gender and Society.

Course Descriptions



PREFIX LISTING

ACC	Accounting	MET	Manufacturing Technology
AES	Aerospace Studies	MGT	Management
AFR	African American Studies	MHL	Music: History/Literature
AIS	American Indian Studies	MKT	Marketing
AJS	Administration of Justice	MST	Microsoft Technology
ARH	Art Humanities	MTC	Music: Theory/Composition
ART	Art	MUP	Music: Performance
ASB	Anthropology (Soc/Behv Sciences)	OAS	Office Automation Systems
BIO	Biology	PAD	Public Administration
BLT	Building Safety & Construction Technology	PED	Physical Education
BPC	Business/Personal Computers	PHI	Philosophy
CAD	Computer Aided Drafting	PHS	Physical Science
CFS	Child/Family Studies	PHY	Physics
CHM	Chemistry	POS	Political Science
CIS	Computer Information Systems	PPT	Power Plant Technology
CNT	Cisco Networking Technology	PSY	Psychology
COM	Communication	RDG	Reading Education
CPD	Counseling and Personal Development	REL	Religious Studies
CRE	Critical Reading	RES	Respiratory Care
CRW	Creative Writing	SBS	Small Business Management
ECE	Engineering Science	SBU	Society and Business
ECH	Early Childhood Education	SLG	Sign Language
ECN	Economics	SOC	Sociology
EDU	Education	SPA	Spanish
ELC	Electricity	STO	Storytelling
ELT	Electronics Technology	SWU	Social Work
ENG	English	THE	Theatre
ENH	English Humanities	THP	Theatre Performance/ Production
ESL	English as a Second Language	TQM	Total Quality Management
FAC	Facilities Management	WLD	Welding Technology
FON	Food and Nutrition	WST	Women Studies
FRE	French		
FSC	Fire Science Technology		
GBS	General Business		
GLG	Geology		
GTC	General Technology		
HCC	Health Core Curriculum		
HES	Health Science		
HIS	History		
HVA	Heating, Ventilating & Air Conditioning		
HRM	Hotel Restaurant Management		
HUM	Humanities		
ITS	Information Technology Security		
JRN	Journalism		
LBS	Library Skills		
MAT	Mathematics		

ACCOUNTING

ACC111

Accounting Principles I

3 Credits. 3 Periods.

Fundamental theory of accounting principles and procedures. Prerequisites: None.

ACC112

Accounting Principles II

3 Credits. 3 Periods.

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.

ACC230

Uses of Accounting Information I

3 Credits. 3 Periods.

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

Uses of Accounting Information II

3 Credits. 3 Periods.

Introduction to the uses of accounting information for internal and external purposes with emphasis on analysis for use by management. Prerequisites: ACC230.

ACC250

Introductory Accounting Lab

1 Credit. 3 Periods.

Procedural details of accounting for the accumulation of information and generation of reports for internal and external users. Prerequisites: None.

AEROSPACE STUDIES

AES101

The Air Force Today Part 1

LEC 2 Credits. 1 Period.

LAB 0 Credits. 1 Period.

Introduction to U.S. Air Force and AFROTC. Topics include: the Air Force mission and organization, customs and courtesies, officer opportunities, officership and professionalism. Prerequisites: None.

AES103

The Air Force Today II

LEC 2 Credits. 1 Period.

LAB 0 Credits. 1 Period.

Introduction to U.S. Air Force and AFROTC. Topics include: the Air Force mission and organization, customs and courtesies, officer opportunities, officership, and professionalism. Prerequisites: AES101 or ASU Department of Aerospace Studies approval.

AES201

Evolution of USAF Air and Space

Power I

LEC 2 Credits. 1 Period.

LAB 0 Credits. 1 Period.

Further preparation of AFROTC candidate. Topics include: Air Force heritage and leaders, communication skills, ethics, leadership, quality Air Force, and values. Prerequisites: AES103 or ASU Department of Aerospace Studies approval.

AES203

Evolution of USAF Air and Space

Power II

LEC 2 Credits. 1 Period.

LAB 0 Credits. 1 Period.

Topics include: the air Force mission and organization, customs and courtesies, officer opportunities, officership, and professionalism. Prerequisites: AES201 or ASU Department of Aerospace Studies approval.

ADMINISTRATION OF JUSTICE

AJS101

Introduction to Criminal Justice

3 Credits. 3 Periods.

An examination of the organization and jurisdiction of local, state and federal law enforcement, judicial and corrections systems; their history and philosophy; career opportunities and qualifying requirements, terminology and constitutional limitations of the system. Required in AJS curriculum. Prerequisites: None.

AJS107

Patrol Procedures

3 Credits. 3 Periods.

Specialized areas of the patrol function, including responding to crowds, riots, bomb threats, intoxication, hazardous materials, fires, and domestic disputes. Partially fulfills Arizona POST requirements for proficiency skills academy attendance. Prerequisites: None.

AJS109

Substantive Criminal Law

3 Credits. 3 Periods.

Covers philosophy of legal sanctions and historical development from the common law

to modern American criminal law, classifications of crimes, elements of and parties to crimes, general definition of crimes, common defenses utilized. Includes specific offenses and the essential elements of each offense. Required in AJS curriculum. Prerequisites: None.

AJS110

Law and Legal Review I

3 Credits. 3 Periods.

In-depth study of the Arizona laws governing arrest by peace officers, as well as, an intensive study of the Arizona substantive criminal law code (ARS Title 13). Focuses on specific sections of ARS Title 4 and ARS Title 8, as they apply to peace officers in Arizona. Partially fulfills the Arizona POST Board requirements for Proficiency Skills Academy attendance. Prerequisites: None.

AJS123

Ethics and the Administration of

Justice

3 Credits. 3 Periods.

Introduces and explores ethical issues and the justice system. Focuses on ethics and the law, the police, courts and corrections. Reviews ethical theory, concepts and practices as they relate to administration of justice. Encourages critical thinking and value decision making in criminal justice system situations. Prerequisites: None.

AJS124

Correctional Institutions

3 Credits. 3 Periods.

An examination of correctional institutions with an emphasis on personnel and security measures, care and treatment programs and institutional planning. The criminal justice system and matters of custody and treatment. Inmate subcultures, and organized crime in correctional institutions and jails. Prerequisites: None.

AJS131

Police Management Techniques I

3 Credits. 3 Periods.

Police supervisory techniques for planning, organization, coordination, reporting, budgeting and handling related personnel problems. Prerequisites: None.

AJS132

Police Management Techniques II

3 Credits. 3 Periods.

Continuation of AJS131. Management of police personnel including selections procedures, disciplinary practices, public relations, elements of supervision, service ratings, recruiting and probation, and related personnel problems. Prerequisites: AJS131 or instructor's approval.

AJS133**Correctional Supervision I**

3 Credits. 3 Periods.

Basic supervision of correctional employees. Personnel practices, employee discipline and motivation, trust/team building, and one-minute manager principles. Prerequisites: None.

AJS150**Defensive Tactics**

1 Credit. 1 Period.

Skills in the protection against persons armed with dangerous and deadly weapons, demonstration and drill in a limited number of holds and come-alongs, and restraint of prisoners and the mentally ill. May be repeated twice for credit. Prerequisites: None.

AJS200**Current Issues in Criminal Justice**

3 Credits. 3 Periods.

Examines current issues, techniques and trends in the Criminal Justice System. Prerequisites: None.

AJS201**Rules of Evidence**

3 Credits. 3 Periods.

A practical insight into the rules of evidence to include how to recognize evidence: the general rules governing admissibility of evidence; the "hearsay" rule and its exceptions; the use of documentary evidence, written memoranda, photographs, and recordings; corpus delicti; opinion evidence, circumstantial evidence, evidential privileges. Required in AJS curriculum. Prerequisites: None.

AJS205**Criminal Justice Report Writing**

3 Credits. 3 Periods.

Characteristics of reports and field notes, and the importance and uses of each. Form, style, and procedures for writing various reports, including elements of composition, required substance, proper and improper conclusions, and descriptions of persons and property. Prerequisites: None.

AJS210**Constitutional Law**

3 Credits. 3 Periods.

An examination of the U.S. Constitution as it relates to the law enforcement function. Includes statutory law and judicial decisions governing the areas of arrest, search and seizure, interrogations and confessions, self-incrimination and other constitutional guarantees. Required in AJS curriculum. Prerequisites: None.

AJS211**Police Planning**

3 Credits. 3 Periods.

An analysis of the process of planning, and a descriptive study of logical and systematic approaches to strategic, short-range, operational, organizational and tactical planning within a law enforcement organization. Prerequisites: None.

AJS212**Juvenile Justice Procedures**

3 Credits. 3 Periods.

Examines the history and development of juvenile justice theories, procedures, and institutions. Prerequisites: None.

AJS220**Organized Crime**

3 Credits. 3 Periods.

Examines the history, structure and activities of organized crime groups. Reviews theories explaining the existence of organized crime and enforcement strategies used to combat it. Prerequisites: None.

AJS225**Criminology**

3 Credits. 3 Periods.

Study of deviance, society's role in defining behavior; theories of criminality and the economic, social, and psychological impact of crime; relationships between statistics and crime trends. Examines crime victimization and the various types of crimes and categories of offenders. Required in the AJS curriculum. Prerequisites: None.

AJS230**The Police Function**

3 Credits. 3 Periods.

Theories of procedures and methods of operations of public police with emphasis on discretionary powers available to the working police officer. Career opportunities and current trends in law enforcement presented. Prerequisites: None.

AJS249**Community Policing**

3 Credits. 3 Periods.

Examines the history, philosophy, implementation, administration, application, benefits and future of community policing. Prerequisites: None.

AJS260**Procedural Criminal Law**

3 Credits. 3 Periods.

Concerned with the understanding of procedural criminal law. Examines the rationale underlying major court holdings, the

procedural requirements that stem from these holdings, and their effect on the daily operations of the criminal justice system. Prerequisites: None.

AJS270**Community Relations**

3 Credits. 3 Periods.

Examination, recognition and understanding of community problems; community action programs; methods of coping with human behavior, victimology, conflict and communication; ethnic and minority cultures and environments; the community and relationships with the criminal justice system. Prerequisites: None.

AJS275**Criminal Investigation I**

3 Credits. 3 Periods.

Introduction to the theory of criminal investigation. Examines crime scene procedures, case preparation, interviewing, and basic investigative techniques. Prerequisites: None.

AMERICAN INDIAN STUDIES

AIS101**Survey of American Indian Issues**

3 Credits. 3 Periods.

Introduction to critical issues related to Native Americans. Examines political, economic, and social issues. Focuses on contemporary issues and factors influencing American Indian communities. Prerequisites: None.

AIS140**American Indian History**

3 Credits. 3 Periods.

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. Cross-References: HIS140

ANTHROPOLOGY**ASB102****Introduction to Cultural and Social Anthropology**

3 Credits. 3 Periods.

Principles of cultural and social anthropology, with illustrative materials from a variety of cultures. The nature of culture; social, political, and economic systems; religion, aesthetics and language. Prerequisites: None.

ASB223**Buried Cities and Lost Tribes: New World**

3 Credits 3 Periods

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 fragment societies. Examples drawn from North American, Central America, and South America. Prerequisites: None.

ART**ART100****Introduction to Computer Graphic Art**

1 Credits. 2 Periods.

Conceptualization, visualization, and production of art using the computer. Prerequisites: None.

ART111**Drawing I**

3 Credits. 6 Periods.

Fundamental principles of drawing. Emphasis on composition and facility in objective and expressive representation, using variety of drawing media. Prerequisites: None.

ART122**Drawing and Composition II**

3 Credits. 6 Periods.

Emphasis on composition and exploration of drawing media. Prerequisites: ART111.

ART131**Photography I**

3 Credits. 6 Periods.

Basic black and white photographic principles and techniques. Camera functions and controls. Darkroom experience in film processing and printmaking. Camera required. Prerequisites: None.

ART132**Photography II**

3 Credits. 6 Periods.

Advanced camera and darkroom techniques. Aesthetic awareness with personal expression. Prerequisites: ART131 or permission of instructor.

ART151**Sculpture I**

3 Credits. 6 Periods.

Exploration of sculptural form and expression in clay, plaster, stone, wood and metal. Prerequisites or Corequisites: ART115 or permission of instructor.

ART152**Sculpture II**

3 Credits. 6 Periods.

Continuation of ART151 with emphasis on control of sculptural media. Prerequisites: ART151.

ART161**Ceramics I**

3 Credits. 6 Periods.

Introduction to ceramic materials and techniques of hand construction, decorating, glazing and throwing on potters' wheel. Prerequisites: None.

ART162**Ceramics II**

3 Credits. 6 Periods.

Major emphasis on wheel throwing, glaze making and decorating techniques. Prerequisites: ART161.

ART167**Painting I**

3 Credits. 6 Periods.

Exploration of technical and expressive possibilities of various painting media in easel painting. Prerequisites: ART111 and ART112 or permission of instructor.

ART168**Painting II**

3 Credits. 6 Periods.

Continued refinement of painting skills and investigation of new possibilities in painting. Prerequisites: ART167 or permission of instructor.

ART211**Drawing and Composition III**

3 Credits. 6 Periods.

Advanced development of drawing skill with emphasis on compositional theory. Prerequisites: ART122 or permission of instructor.

ART222**Drawing and Composition IV**

3 Credits. 6 Periods.

Further study of drawing techniques with emphasis on individual problems and techniques. Prerequisites: ART211 or permission of instructor.

ART261**Ceramics III**

3 Credits. 6 Periods.

Emphasis on wheel throwing skill and individual style development. Prerequisites: ART162.

ART262**Ceramics IV**

3 Credits. 6 Periods.

Experimental work in clays and glazes. Prerequisites: ART261.

ART298AA**Special Projects**

Lab 1 Credits. 1 Periods.

Organize 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: None.

ART HUMANITIES**ARH101****Prehistoric through Gothic Art**

3 Credits. 3 Periods

History of art from prehistoric through medieval period. Prerequisites: None.

ARH102**Renaissance through Contemporary Art**

3 Credits. 3 Periods

History of art from around the world from the Renaissance through contemporary period. Prerequisites: None.

ARH109**History of American Art**

3 Credits. 3 Periods.

Development and variety of American Art. Presentation of architecture, sculpture, painting and decorative objects. Prerequisites: None.

ARH115**History of Photography**

3 Credits. 3 Periods.

Survey of history of photography from beginning to present. Emphasizes medium's impact upon society and other visual arts. Technical developments, aesthetic concerns, and individual photographers studied. Prerequisites: None.

BIOLOGY**BIO100****Biology Concepts**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

A one-semester introductory course not 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 student's expense. Prerequisites: None.

BIO105**Environmental Biology**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Fundamentals of ecology and their relevance to human impact on natural ecosystems. Field trips may be required at students' expense. Prerequisites: None.

BIO109**Natural History of the Southwest**

3 Credits. 3 Periods.

Study of the common plants and animals of the southwest including their distribution, adaptation, behavior and ecology. Prerequisites: None.

BIO110**Laboratory for Natural History of the Southwest**

1 Credit. 3 Periods.

Introduction to basic field and laboratory techniques used in the study of natural history. Specific field problems presented dealing with plant and animal analysis and ecological interrelationships. Weekend field trips required at students' expense. Prerequisites or Corequisites: BIO109 or permission of instructor.

BIO160**Introduction to Human Anatomy and Physiology**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

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.

BIO181**General Biology (Majors) I**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Principles of structure and function of living things at molecular, cellular, and organismic levels of organization. Field trips may be required at students' expense. Prerequisites: None. One year of high school chemistry or one semester of college-level chemistry is strongly recommended.

BIO182**General Biology II (Majors)**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Additional principles of structure and function of living things at molecular, cellular, and organismic and higher levels of organization. Field trips may be required at students' expense. Prerequisites: BIO181 or permission of instructor.

BIO201**Human Anatomy and Physiology I**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

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, or equivalent, or permission of instructor.

BIO202**Human Anatomy and Physiology II**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

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: BIO201 or permission of instructor.

BIO205**Microbiology**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Study of microorganisms and their relationship to health, ecology, and related fields. Prerequisites: BIO156, or BIO181, or equivalent, or permission of instructor.

BUILDING SAFETY & CONSTRUCTION TECHNOLOGY**BLT263****Building Codes**

3 Credits 3 Periods.

Designed specifically to acquaint students with safety principles of building

construction under the Uniform Building Code, including structural requirements for wood, masonry and concrete, fire resistance of building construction, fire resistant materials, and ratings and occupancy requirements. Prerequisites: None.

CHEMISTRY**CHM130****Fundamental Chemistry**

3 Credits. 3 Periods.

Elements of general chemistry for all students. Serves to prepare the student for CHM151, or CHM230. Prerequisites: Grade of "C" or better in CHM090, or MAT091, or MAT092, or MAT102, or satisfactory score on math placement exam. Course Note: Course content designed to meet the needs of students in such areas as agriculture, home economics, nursing, and physical education among others.

CHM130LL**Fundamental Chemistry Laboratory**

1 Credit. 3 Periods.

Laboratory experience in support of CHM130. Prerequisites or Corequisites: CHM130.

CHM151**General Chemistry I**

3 Credits. 3 Periods.

A detailed study of the principles of chemistry. Designed for science majors and students in pre-professional curricula. Completion of CHM151LL required to meet the Natural Science requirement. Prerequisites: (CHM130 and CHM130LL) or one year high school chemistry with a grade of "C" or better, and completion of Intermediate Algebra or equivalent.

CHM151LL**General Chemistry I Lab**

1 Credit. 3 Periods.

Laboratory experience in support of CHM151. Prerequisites: CHM130LL or equivalent. Prerequisites or Corequisites: CHM151.

CHM152**General Chemistry II**

3 Credits. 3 Periods.

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.

CHM152LL**General Chemistry II Lab**

1 Credit. 3 Periods.

Laboratory experience in support of CHM152. Prerequisites: CHM151LL or equivalent. Prerequisites or Corequisites: CHM152.

CHM154**General Chemistry II with Qual**

3 Credits. 3 Periods.

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.

CHM154LL**General Chemistry II with Qualitative Laboratory**

2 Credits. 6 Periods.

Laboratory experience in support of CHM154. Includes qualitative analysis. Prerequisites: CHM151LL or equivalent. Prerequisites or Corequisites: CHM154.

CHM235**General Organic Chemistry I**

3 Credits. 3 Periods.

Rigorous introduction to chemistry of carbon-containing compounds. Reaction mechanisms and recent methods of synthesis emphasized. Prerequisites: CHM152 and CHM152LL, or CHM154 and CHM154LL.

CHM235LL**General Organic Chemistry I****Laboratory**

1 Credit. 4 Periods.

Laboratory experience in support of CHM235. Prerequisites: CHM152LL, or CHM154LL, or equivalent. Prerequisites or Corequisites: CHM235.

CHM298AA**Special Projects**

1 Credit. 1 Period.

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.

CHILD/FAMILY STUDIES**CFS176****Child Development**

3 Credits. 3 Periods.

Study of human development from the prenatal stage through adolescence, with consideration of parent and adult roles in the life experience of the growing child. Independent observation of children and personal investigation into child-related issues in contemporary America included. Prerequisites: None. Cross-reference: ECH176.

CFS178**Survey of Early Childhood Education**

3 Credits. 3 Periods.

Orientation to basic concepts of day care and nursery programs. History and philosophy of child care services including state regulations governing those services. Observation opportunities provided. Prerequisites: None.

CFS192**Child Care Center Staff Development**

1 Credit. 1 Period.

Presents strategies to administrators and supervisors in child care centers for developing the personal and professional growth of child care staff. Prerequisites: None.

CFS269**Child Care Seminar**

1 Credit. 1 Period.

Emphasizes the blend of job-related activities including career exploration, employment procedures, human relations, and on-the-job issues. May be repeated for atotal of three (3) credit hours. Prerequisites: Departmental approval.

CFS284AB**Early Childhood Teaching Internship**

3 Credit. 3 Period.

Work experience in child care centers. 80 hours of designated work per credit. Maximum of 6 credits allowed. Prerequisites: CFS/ECH176 and permission of department. Corequisites: CFS/ECH269.

CFS285AA**Family-School Interaction: Preschool**

1 Credit. 1 Period.

Interaction among parents, teachers and the preschool. Emphasis on methods used cooperatively by parents and preschool teachers to provide for education and developmental needs. Prerequisites: CFS176 or CFS278 or permission of instructor.

CISCO NETWORKING TECHNOLOGY**CNT120****Adobe Web Design**

3 Credits. 4 Periods.

Development of knowledge and skills required to design web pages and their elements using a variety of Adobe applications including GoLive, Premiere, Photoshop, Illustrator and Live Motion. Design theory relevant to maximizing web readership including interactive and multimedia elements, speed and accessibility optimization, and intuitive user interfaces. Prerequisites: CIS105 or permission of instructor. CIS150 recommended.

CNT140**Cisco Networking Basics**

4 Credits. 6 Periods.

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.

CNT150**Cisco Networking Router Technologies**

4 Credits. 6 Periods.

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.

CNT160**Cisco Switching Basics and Intermediate Routing**

3 Credits. 4 Periods.

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.

CNT170**Cisco wide Area Networks (WAN)****Technologies**

3 Credits. 4 Periods.

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.

CNT186**Fundamentals of Wireless LANs**

4 Credits. 5 Periods.

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**Cisco Network Design**

3 Credits. 4 Periods.

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**Cisco Networking Advanced Routing**

4 credits 6 Periods.

Development of knowledge and skills needed to manage Internet Protocol (IP) traffic and access, design Wide Area Networks (WANs), understand scalable internetworks and Quality of Service (QoS), configure advanced routing

protocols (Routing Internet Protocol version 2 [RIPv2], Border Gateway Protocol [BGP], Intermediate System to Intermediate System [IS-IS], Enhanced Interior Gateway Routing Protocol [EIGRP], Open Shortest Path First [OSPF]), and perform advanced IP addressing (Network Address Translation [NAT], Variable Length Subnet Masking [VLSM]). Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170 or CCNA industry certification, or permission of instructor. Corequisites: CNT210 and CNT220.

CNT210**Cisco Networking Remote-Access****Networks**

4 Credits. 6 Periods.

Emphasis on development of knowledge and skills to build, configure and troubleshoot a remote-access network to interconnect central sites of branch offices, home offices and control access to the central site plus maximize bandwidth over remote links. Preparation for Cisco Certified Network Professional (CCNP) exam. Prerequisites: CNT170, or CCNA industry certification, or permission of instructor. Corequisites: CNT200 and CNT220.

CNT220**Cisco Networking Multi-Layer****Switching**

4 Credits. 6 Periods.

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**Cisco Network Troubleshooting**

4 Credits. 6 Periods.

Emphasis on troubleshooting complex network problems by focusing on documenting and baselining a network, utilizing troubleshooting methodologies and tools, and learning effective skills in Layer 1 to 7 troubleshooting. Preparation for the last of four exams leading to the Cisco Certified Network Professional (CCNP) certification. Prerequisites: CNT200, CNT210 and CNT220, or CCNP Advanced Routing, Remote Access, and Multi-Layer Switching Certification, or permission of instructor.

CNT298AC**Special Projects**

3 Credits. 3 Periods.

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.

COMMUNICATION**COM100****Introduction to Human****Communication**

3 Credits. 3 Periods.

Theory and practice of communication skills in public, small group, and interpersonal settings. Includes study of the speech communication process. Prerequisites: None.

COM110**Interpersonal Communication**

3 Credits. 3 Periods.

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.

COM225**Public Speaking**

3 Credits. 3 Periods.

Designed to improve one's self-confidence and self-concept through improving communication skills used in public speaking. To enhance each student's ability to present his/her ideas in an organized, time-constrained format. To improve critical thinking skills and enhance student's ability to express himself or herself objectively, subjectively, and creatively. Prerequisites: ENG101 or ENG107 or equivalent.

COM230**Small Group Communication**

3 Credits. 3 Periods.

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: ENG101 or ENG107 or equivalent.

COM241**Performance of Literature**

3 Credits. 3 Periods.

The study, analysis, and preparation of oral presentation of prose, poetry, and dramatic literature. Preparation of material for public audiences. Prerequisites: ENG101 or ENG107 or equivalent.

COM243**Interpreters Theatre**

3 Credits. 4 Periods.

Study, analysis, rehearsal, and performance of various types of literature. Prerequisites: None.

COM259**Communication in Business and Professions**

3 Credits. 3 Periods.

Interpersonal, group, and public communication in business and professional organizations. Emphasis on oral communication. Prerequisites: ENG101 or ENG107 or equivalent.

COM263**Elements of Intercultural Communication**

3 Credits. 3 Periods.

Basic concepts, principles, and skills for improving oral communication between persons from different minority, racial, ethnic, and cultural backgrounds. Prerequisites: None.

COMPUTING**BPC101AA****Introduction to Microcomputers I:****IBM**

1 Credit. 2 Periods.

Microcomputer software applications for the IBM personal computer, including electronic spreadsheet and word processing, keyboarding review, and a desktop environment. Prerequisites: None.

BPC101BA**Introduction to Microcomputers II:****IBM**

1 Credit. 1 Period.

Microcomputer software applications for the IBM personal computer, including database management, computer graphics, electronic spreadsheet, and word processing, and operating system commands. Prerequisites: BPC101AA

BPC110**Computer Usage and Application**

3 Credits. 4 Periods.

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.

BPC118AB**Powerpoint: Level I**

1 Credit. 2 Periods.

Use of Powerpoint software to produce professional-quality presentation visuals. Prerequisites: None. Cross-reference: CIS118AB.

BPC118BB**Powerpoint: Level II**

1 Credit. 2 Periods.

Use of Powerpoint software add movement and sound to desktop presentations to enhance audience attention. Prerequisites: BPC/CIS118AB. Cross-reference: CIS118BB.

BPC118CB**Powerpoint: Level III**

1 Credit. 1 Period.

Use of Powerpoint software for advanced desktop presentation techniques, including advanced animation and sound sequences. Prerequisites: BPC/CIS118BB. Cross-reference: CIS118CB.

BPC118DB**Desktop Presentation: Powerpoint**

3 Credits. 5 Periods.

Use of PowerPoint to produce professional-quality presentation visuals with animation and sound. Prerequisites: None. Cross-Reference: CIS118DB.

BPC121AB**MS-DOS Operating System**

1 Credit. 2 Periods.

Use of the MS-DOS operating system: basic concepts, internal and external commands, subdirectories, and editor. Prerequisites: None. Cross-Reference: CIS121AB

BPC128**Introduction to Desktop Publishing**

1 Credit. 2 Periods.

Presents basic concepts of commercially prepared software used to do desktop publishing. Incorporates a combination of narrative and pictorial/graphic creation and presentation, including set up, text entry, graphic generation, text and graphic merging, and other computer-based functions. Prerequisites: None.

BPC133DA**The Internet/Web Development Level I**

3 Credits. 4 Periods.

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 is also included. Prerequisites: None. Cross-reference: CIS133DA.

BPC135DK**Word: Level I**

2 Credits. 2 Periods.

Using Word 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. Cross-reference: OAS135DK.

BPC138AA**Windows Desktop Design & Publishing**

3 Credits. 4 Periods.

Use of Windows based microcomputers and appropriate commercial software package to compose and print textual and graphic materials of high quality. Includes overview of micro operating system, word processing of copy, use of graphics programs, layout of design elements, and printing alternatives. Prerequisites: CIS105 or BPC110 or permission of instructor.

BPC138BA**Windows Desktop Design & Publishing Using Quark Express**

3 Credits. 4 Periods.

Use of Windows based microcomputers and appropriate commercial software package to compose and print textual and graphic materials of high quality. Includes overview of micro operating system, word processing of copy, use of graphics programs, layout of design elements, and printing alternatives. Prerequisites: CIS105 or BPC110 or permission of instructor.

BPC138CA**Windows Desktop Design & Publishing Using Pagemaker**

3 Credits. 4 Periods.

Use of Windows based microcomputers and appropriate commercial software package to compose and print textual and graphic materials of high quality. Includes overview of micro operating system, word processing of copy, use of graphics programs, layout of design elements, and printing alternatives. Prerequisites: CIS105 or BPC110 or permission of instructor.

BPC170**Computer Maintenance I: A+ Prep**

3 Credits. 4 Periods.

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 and BPC121AB or permission of instructor.

BPC171**Recycling Used Computer Technology**

1 Credit. 2 Periods.

Use of hardware maintenance knowledge and skills to refurbish used computers. Prerequisites: BPC170 or permission of instructor.

BPC238BA**Windows Advanced Desktop Design & Publishing Using Quark Express**

3 Credits. 4 Periods.

Advanced use of Windows microcomputers and commercial software packages to compose and print textual and graphic materials of high quality. Includes review of fundamental desktop techniques and concepts, alternative treatment of copy, use of complex graphics programs, typographical manipulation, color separating, exploration of alternative layout programs, preparation of larger-scale and unusual publications, and additional printing alternatives. Prerequisites: BPC138BA or permission of instructor.

BPC238CA**Windows Advanced Desktop Design & Publishing Using Pagemaker**

3 Credits. 4 Periods.

Advanced use of Windows microcomputers and commercial software packages to compose and print textual and graphic materials of high quality. Includes review of fundamental desktop techniques and concepts, alternative treatment of copy, use of complex graphics programs, typographical manipulation, color separating, exploration of alternative layout programs, preparation of larger-scale and unusual publications, and additional printing alternatives. Prerequisites: BPC138CA or permission of instructor.

BPC270**Microcomputer Maintenance II**

3 Credits. 4 Periods.

Advanced technical aspects of maintaining and servicing microcomputers. Emphasis placed on installation, periodic maintenance, diagnosis, and/or problem resolution of power system, motherboard, memory,

storage devices, and network interface cards. Extensive use of software diagnostic and utility tools. Prerequisites: BPC170 with grade of C or better, or permission of instructor.

BPC273**Advanced Server Computer Maintenance: Server+ Prep**

3 Credits. 4 Periods.

Focuses on complex technical aspects of the microcomputer server, including hardware installation, configuration, and troubleshooting. Strong emphasis on network operating systems installations, data storage subsystems, and data recovery. Preparation for the CompTIA Server+ examination. Prerequisites: BPC170 and MST140 or permission of instructor.

BPC278**Software Installation - MS Windows**

3 Credits. 4 Periods.

Installing and configuring microcomputer software. Emphasis placed on the installation, configuration, upgrade, and related problem resolution of microcomputer operating system and applications software. Prerequisites: CIS105, CIS114 (any module whose course number suffix begins with a "D"), CIS117 (any module whose course number suffix begins with a "D"), and BPC170 with grade of C or better, or permission of instructor.

CIS102**Interpersonal and Customer Service Skills for IT Professionals**

1 Credit. 1 Period.

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.

CIS103**Using Help Desk Software**

2 Credits. 3 Periods.

Help desk software applications for tracking calls, querying data, recording macros, and generating reports. Prerequisites: CIS105 or permission of instructor.

CIS105**Survey of Computer Information Systems**

3 Credits. 4 Periods.

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.

CIS114AE**Excel: Level I**

1 Credit. 2 Periods.

Computer spreadsheet skills for solving business problems using Excel, including calculations, forecasting and projections. Prerequisites: None. Cross-reference: BPC114AE.

CIS114BE**Excel: Level II**

1 Credit. 2 Periods.

Additional Excel spreadsheet techniques, including macro programming, database searching, extraction, and linking to obtain prescribed reports and graphs. Prerequisites: BPC/CIS114AE or permission of instructor. Cross-reference: BPC114BE.

CIS114CE**Excel: Level III**

1 Credit. 1 Period.

Additional Excel spreadsheet techniques, including complex macros, statistics, and matrix manipulation. Project design using multiple, integrated spreadsheets. Prerequisites: BPC/CIS114BE or permission of instructor. Cross-reference: BPC114CE.

CIS114DE**Excel Spreadsheet**

3 Credits. 5 Periods.

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. Cross-reference: BPC114DE.

CIS117AM**Database Management: Microsoft****Access: Level I**

1 Credit. 2 Periods.

Introduction to the basic elements of a current version of the Microsoft Access database management program, for casual and beginning users. Prerequisites: None. Cross-reference: BPC117AM.

CIS117BM**Database Management: Microsoft****Access: Level II**

1 Credit. 2 Periods.

Exploration of additional components of the Microsoft Access database management program. Prerequisites: BPC/CIS117AM or permission of instructor. Cross-reference: BPC117BM.

CIS117CM**Database Management: Microsoft****Access: Level III**

1 Credit. 1 Period.

Application of the features of the Microsoft Access program to some common database management problems. Prerequisites: BPC117BM or CIS117BM. Cross-reference: BPC117CM.

CIS117DM**Microsoft Access: Database Management**

3 Credits. 5 Periods.

Introduction to the basic elements, exploration of additional components and common database management problems related to the Microsoft Access program. Combines the contents of BPC/CIS117AM and BPC/CIS117BM and BPC/CIS117CM. Prerequisites: None. Cross-reference: BPC117DM.

CIS119DO**Introduction to Oracle: SQL**

3 Credits. 4 Periods.

Use of Oracle tools and methodologies to fulfill real-world business information requirements. Hands-on exercises for designing, creating, and maintaining database structures to store, retrieve, update, and display data in a relational database using the SQL programming language. Creating and maintaining database objects. Advanced retrieval techniques. Prerequisites: CIS105 or permission of instructor.

CIS119DP**Oracle: Database Administration**

3 Credits. 4 Periods.

Basic administrative tasks performed by a database administrator (DBA). Conceptual understanding and hands-on applications of the Oracle database architecture and interaction of its components. Prerequisites: (CIS119DO, and CIS164AB), or CIS126++, or permission of instructor.

CIS119DQ**Oracle: Backup and Recovery**

2 Credits. 3 Periods.

Various backup, failure, restore, and recovery scenarios that apply to Oracle database environments. Backup methodologies based on business requirements in a mission critical enterprise. Multiple strategies and Oracle tools such as Recovery Manager. Prerequisites: CIS119DP or permission of the instructor.

CIS119DR**Oracle: Performance Tuning**

3 Credits. 4 Periods.

Recognizing, troubleshooting, and resolving common performance related problems in administering an Oracle database. Includes an interactive workshop that will provide participants with the opportunity to walk through numerous real-world performance tuning case studies. Prerequisites: CIS119DP or permission of the instructor.

CIS120AB**Computer Graphics: Adobe Illustrator-Level 1**

1 Credit. 2 Periods.

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, graphics design, and color graphics. Prerequisites: None. Cross-References: BPC120AB

CIS120AF**Computer Graphics: Adobe Photoshop: Level I**

1 Credit. 2 Periods.

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. Cross-reference: BPC120AF.

CIS120BB**Computer Graphics: Adobe Illustrator-Level II**

1 Credit. 1 Periods.

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, and create a PDF file. Prerequisites: BPC/CIS120AB Cross-References: BPC120BB

CIS120BF**Computer Graphics: Adobe****Photoshop: Level II**

1 Credit. 1 Periods.

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: BPC/CIS120AF. Cross-References: BPC120BF

CIS120CB**Computer Graphics: Adobe****Illustrator-Level III**

1 Credit. 1 Periods.

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, graphics design, color graphics, determine file formats appropriate for web and print, and utilize tools to optimize graphics. Prerequisites: BPC/CIS120BB. Cross-References: BPC120CB

CIS120CF**Computer Graphics: Adobe****Photoshop: Level III**

1 Credit. 1 Period.

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: BPC/CIS120BF. Cross-Reference: BPC120CF.

CIS120DB**Computer Graphics: Adobe Illustrator**

3 Credits. 4 Periods.

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. Cross-References: BPC120DB

CIS120DC**Computer Graphics: Macromedia****Flash**

3 Credits. 4 Periods.

Provides students with the ability to use Macromedia Flash graphics software on microcomputers. Covers basic animation techniques used in the creation, manipulation, and editing of Flash animation graphics. Prerequisites: None. Cross-References: BPC120DC

CIS120DF**Computer Graphics: Adobe Photoshop**

3 Credits. 4 Periods.

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. Cross-References: BPC120DF

CIS121AB**MS-DOS Operating System**

1 Credit. 2 Periods.

The use of the MS-DOS operating system: basic concepts, internal and external commands, subdirectories, and editor. Prerequisites: None. Cross-reference: BPC121AB.

CIS121AE**Windows Operating System: Level I**

1 Credit. 2 Periods.

Specific topics include booting and shutting down the computer, navigating the desktop, start button features, taskbar status, and receiving on-line help support. Exploring and managing folders and files, running programs, and learning about Wordpad and Paint application programs. Prerequisites: None. Cross-References: BPC121AE.

CIS122AC**UNIX Operating System: Multi-User**

1 Credits. 2 Periods.

The use of the UNIX operating system on a midrange or mainframe computer; basic concepts, commands, file organization and management, and task management. Prerequisites: None.

CIS126AL**Linux Operating System I**

1 Credits. 2 Periods.

Introduction to the Linux Operating system. Develop knowledge and skills required to install, configure a Linux-based workstation including basic network functions. Prerequisites: None.

CIS126BL**Linux Operating System I**

1 Credits. 1 Periods.

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

CIS126CL**Linux Operating System III**

1 Credits. 1 Periods.

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**UNIX Operating System**

3 Credits. 4 Periods.

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**Linux Operating System**

3 Credits. 4 Periods.

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.

CIS133AA**The Internet/Web Development: Level I: Module A**

1 Credit. 2 Periods.

Overview of the Internet and its resources. Hands-on experience with various Internet communication tools. Prerequisites: None. Cross-References: BPC133AA

CIS133BA**The Internet/Web Development: Level I: Module B**

1 Credit. 1 Period.

Exploration of additional Internet resources. Hands-on experience with a variety of resource discovery and information retrieval tools as well as enhancement of Web pages. Prerequisites: BPC/CIS133AA. Cross-References: BPC133BA.

CIS133CA**The Internet/Web Development: Level I: Module C**

1 Credit. 1 Period.

Web site development using the enhancement codes. Includes frames, style sheets and javascript as well as design principles and typography. Prerequisites: BPC/CIS133BA. Cross-References: BPC133CA

CIS133DA**The Internet/Web Development Level I**

3 Credits. 4 Periods.

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. Cross-References: BPC133DA.

CIS140**Survey of Multimedia Technology**

2 Credits. 3 Periods.

Introduction to multimedia technology and its uses. Overview of the various hardware and software used in developing and delivering multimedia. Emphasis on how multimedia is used in education and training. Provides a basic understanding of the process used to define and develop multimedia applications. Prerequisites: CIS105, or permission of instructor. Cross-reference: MMT140.

CIS150**Programming Fundamentals**

3 Credits. 4 Periods.

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.

CIS151**Computer Game Development -Level I**

3 Credits. 4 Periods.

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

CIS158**COBOL Programming I**

3 Credits. 4 Periods.

Programming in structured COBOL for preparation of business reports. Hands-on computer experience. Prerequisites: CIS105, or permission of instructor.

CIS159**Visual Basic Programming I**

3 Credits. 4 Periods.

Use of the Visual Basic programming language

to solve problems using suitable examples from business or other disciplines. Prerequisites: CIS105 or permission of instructor.

CIS162**C Programming I**

3 Credits. 4 Periods.

Beginning C programming. Includes features needed to construct programs, functions, pointers, input and output options, data types, structures, and unions, and disk file operations. Prerequisites: CIS105 or permission of instructor.

CIS162AB**C++: Level I**

3 Credits. 4 Periods.

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.

CIS162AC**Visual C++: Level I**

3 Credits. 4 Periods.

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**Java Programming: Level I**

3 Credits. 4 Periods.

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.

CIS164AC**Oracle: Developer Forms I**

3 Credits. 4 Periods.

Building and testing interactive applications consisting of one or more Developer forms modules. Building a complete forms application using Oracle Developer. Customizing forms with graphical user input items, such as check boxes, list items and radio groups. Modifying data access by creating event-related triggers. Prerequisites: CIS164AB, or permission of instructor.

CIS164AD**Oracle: Developer Forms II**

2 Credits. 3 Periods.

An opportunity to broaden skills using Developer Forms. Complex concepts, such as programming function keys, timers, and record groups. Using programmatic controls to manage the behavior and appearance of windows at runtime. Creating advanced multiple-form applications and managing multiple transactions across modules. Prerequisites: CIS164AC or permission of instructor.

CIS164AE**Oracle: Developer Reports**

3 Credits. 4 Periods.

Building a variety of standard and custom reports in a client-server environment. Using a graphical user interface (GUI) environment to retrieve, display, and format data in many styles to create tabular, matrix, mailing label, and letter reports. Customizing more complex reports, embedding graphical charts in reports, and using the Intelligent Remote Reports Server. Prerequisites: CIS164AB or permission of instructor.

CIS164AG**Oracle: Data Modeling and Relational Database Design**

2 Credits. 3 Periods.

Top-down, systematic approach to developing a relational database and defining requirements as entities, attributes, and relationships. Developing an entity-relationship (ER) diagram that accurately reflects the business. Mapping the ER diagram to an initial database design. Prerequisites: CIS105 or permission of instructor.

CIS166**Web Scripting/Programming**

3 Credits. 4 Periods.

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.

CIS190**Introduction to Local Area Networks**

3 Credits. 4 Periods.

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.

CIS191**Novell NetWare System****Administration**

3 Credits. 4 Periods.

Knowledge and skills required to administer or manage a Novell NetWare local area network operating system. Level I, II, and III network management tasks. Prerequisites: CIS109 and BPC121AB, or BPC102AA and BPC102BA, or CIS105, or permission of instructor.

CIS217AM**Advanced Microsoft Access: Database Management**

3 Credits. 4 Periods.

Advanced database concepts including database design, primary and secondary key selection and relationships between tables. Queries, sub forms, macros, events, Visual Basic modules and Access Internet features also covered. Prerequisites: (BPC/CIS117DM or BPC/CIS117CM). Cross-References: BPC217AM

CIS220DF**Advanced PhotoShop**

3 Credits. 4 Periods.

Goes beyond the basic use of palettes, selections, layers, menus, and tool options, and focuses on using Photoshop software's advanced features to manipulate and correct digital and digitally produced images. Prerequisites: (BPC/CIS120AF, BPC/CIS120BF and BPC/CIS120CF) or BPC/CIS120DF, or permission of instructor. Cross-References: BPC220DF

CIS221**Advanced DOS**

2 Credits. 3 Periods.

Advanced DOS commands, concepts, and usage. Emphasis on batch file programming, configuration and optimization of the DOS environment, various commercial utilities, security and disaster planning, and legal considerations. Prerequisites: CIS121AB or (BPC102AA and BPC102BA) or permission of instructor.

CIS224**Project Management Microsoft Project for Windows**

3 Credits. 4 Periods.

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 ccMail. Prerequisites: None. Cross-References: BPC224

CIS225**Business Systems Analysis and Design**

3 Credits. 3 Periods.

Investigation, analysis, design, implementation and evaluation of business computer systems. Prerequisites: Any programming language or permission of instructor.

CIS225AB**Object-Oriented Analysis and Design**

3 Credits. 3 Periods.

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 program language, or permission of instructor.

CIS226AA**Internet/Intranet Server Administration-UNIX**

3 Credits. 4 Periods.

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

CIS233AA**Web Design and Publishing I**

1 Credit. 1 Periods.

Design and creation of pages on the Internet's World Wide Web using hypertext markup language (HTML). Hands-on experience authoring HTML and preparing sophisticated web documents. Prerequisites: BPC/CIS133BA or permission of instructor.

CIS233BA**Web Design and Publishing II**

1 Credit. 1 Period.

Hands-on experience designing Web presentations using advanced markup languages, programming languages, scripts and multimedia. Prerequisites: CIS233AA or permission of instructor.

CIS233CA**Web Design and Publishing III**

1 Credit. 1 Period.

Exploration of best practices/issues for web design and publishing and careers in web development and e-commerce. Prerequisites: CIS233BA or permission of instructor

CIS233DA**Web Design and Publishing**

3 Credits. 4 Periods.

Design and create pages on the World Wide Web with a variety of markup languages, programming languages, scripts, and multimedia. Hands-on experience authoring and preparing sophisticated web documents. Exploration of best practices/issues for web design and publishing and careers in web development and e-commerce. Prerequisites: BPC/CIS133CA or BPC/CIS133DA or permission of instructor.

CIS235**e-Commerce**

3 Credits. 4 Periods.

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.

CIS238DL**Linux System Administration**

3 Credits. 4 Periods.

IManaging 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

CIS239DL**Linux Shell Scripting**

3 Credits. 4 Periods.

Linux Shell Scripting syntax and methods including the automation of system tasks as well as interpreted user-level programming. Course includes the Linux Borne Again Shell (BASH) as well as a variety of industry competitors. Prerequisites: CIS238DL or permission of instructor.

CIS240DL**Linux Network Administration**

3 Credits. 4 Periods.

In depth networking based on Linux servers and the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite. Integrating Linux servers and workstations into a network environment with multi-platform network operating systems including a variety of open-standard and proprietary protocols. 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 instructor approval.

CIS250**Management Information Systems**

3 Credits. 3 Periods.

Business organization, control, and communication; database concepts; systems design; and computer systems. Prerequisites: CIS225.

CIS251**Computer Game Development -Level II**

3 Credits. 4 Periods.

Advanced object-oriented game development, advanced game design, and advanced game theory. Use of game development software tools to demonstrate advanced concepts for modeling real-time simulations and creating computer games using object oriented development tools. In depth coverage of game programming (scripting) techniques, and decision logic using object oriented techniques. Prerequisites: CIS151 or permission of instructor

CIS253**Computer Game Development -Level III**

3 Credits. 4 Periods.

Advanced object oriented game development, controlling and programming game and windows resources using the game development language. Modeling real-time simulations and game worlds using advanced

programming techniques and artificial intelligence. Creation of network and Internet based multi-player games using object oriented techniques and packet based communication protocols. Prerequisites: CIS251 or permission of Instructor.

CIS259**Visual Basic Programming II**

3 Credits. 4 Periods.

Use of the Visual Basic programming language to identify and solve advanced problems using suitable examples from business or other disciplines. Prerequisites: CIS159 or permission of instructor.

CIS262**C Programming II**

3 Credits. 4 Periods.

Advanced level C programming. Programming with emphasis on data management, dynamic allocation, varied memory models, interfacing with the operating system, efficiency, and advanced debugging techniques. Prerequisites: CIS162, or permission of instructor.

CIS263AA**Java Programming: Level II**

3 Credits. 4 Periods.

Intermediate Java programming. Includes features needed to construct object-oriented programming, multireading, multimedia, files, streams, and data structure. Prerequisites: CIS163AA or permission of instructor.

CIS270**Essentials of Network and Information Security**

3 Credits. 4 Periods.

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.

CIS271DL**Linux Security**

3 Credits. 4 Periods.

Implementing in-depth security methods and techniques in a Linux-based network environment. Utilize programs, utilities and configuration techniques to provide user-level, file system, and network security. Gain knowledge in a variety of security cracking

techniques and how to guard against them. In all aspects of security, the standard of practicing professional ethics seriously emphasized. Preparation for industry certifications such as the SAIR/GNU LCP and LCA certificates, CompTIA's Linux+, RHCT, RHCE, and LPIC. Prerequisites: CIS240DL or Permission of Instructor.

CIS290AA**Computer Information Systems****Internship**

1 Credit. 6 Periods.

Work experience in business or industry. Prerequisites: Permission of instructor.

Cross-References: BPC290AA

CIS290AB**Computer Information Systems****Internship**

2 Credits. 12 Periods.

Work experience in business or industry. Prerequisites: Permission of instructor.

Cross-References: BPC290AB

CIS290AC**Computer Information Systems****Internships**

3 Credits. 18 Periods.

Work experience in business or industry. Prerequisites: Permission of instructor.

Cross-References: BPC290AC

CIS296WB**Cooperative Education**

2 Credits. 10 Periods.

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

CIS298AC**Special Projects**

3 Credits. 3 Periods.

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

COUNSELING AND PERSONAL DEVELOPMENT**CPD100****Orientation for Student Development**

1 Credit. 1 Period.

Offered to orient new students to college life. Emphasis on assessing students' academic potential, facilitating curricular advisement and registration procedures, learning academic survival skills, and becoming aware of all services available to students on campus and in the community. Prerequisites: None.

CPD103BL**Dynamics of Leadership**

2 Credits. 2 Periods.

Designed to provide strategies that may be used when assuming leadership roles. Focus on improving supervisory confidence through the development of appropriate competitive behaviors, problem-solving skills, and techniques of leadership. Prerequisites: None.

CPD104**Career and Personal Development**

3 Credits. 3 Periods.

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**Strategies for College Success**

3 Credits. 3 Periods.

Focus on increasing student success through the college orientation and personal growth, study skills development, and educational and career planning. Prerequisites: None. Cross-reference: AAA150.

CPD150AA**College Orientation & Personal Growth**

1 Credit. 1 Period.

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. Cross-References: AAA150AA

CPD150AB**Study Skills Development**

1 Credit. 1 Period.

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. Cross-reference: AAA150AB.

CPD150AC**Educational & Career Planning**

1 Credit. 1 Period.

Emphasis on increasing student success through educational and career planning. Prerequisites: None. Cross-Reference: AAA150AC.

CPD160**Introduction to Multiculturalism**

3 Credits. 3 Periods.

Examination of the multiple cultures and subcultures within the contemporary United States. Personal exploration of awareness and appreciation of multiculturalism. Activities for experiencing diverse cultural perspectives. Skills for recognizing, analyzing, and mediating cultural and psychological factors impacting conflict and accord between diverse cultures. Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. Prerequisites: None.

CREATIVE WRITING**CRW170****Introduction to Writing Fiction**

3 Credits. 3 Periods.

Practice in writing fiction through a process of prewriting (invention and discovery), writing, analysis and evaluation (in workshop), and revision; practice in manipulating various elements and forms of fiction; production of marketable quality short fiction. Prerequisites: None. CRW150 recommended but not required.

CRITICAL READING**CRE101****Critical and Evaluative Reading I**

3 Credits. 3 Periods.

Emphasis on applying critical inquiry skills to varied and challenging reading materials. Includes analysis, synthesis, and evaluation through written discourse. Prerequisites: ENG101 and (reading placement test score of 41 or higher (ASSET), or grade of "C" or better in RDG091, or permission of instructor.)

DRAFTING TECHNOLOGY**DFT105****Computer-Aided Drafting I**

3 Credits. 6 Periods.

Industrial use of Computer Aided Drafting (CAD) equipment (hardware and software) in the areas of mechanical, electronic and construction drawings. Prerequisites: None.

EARLY CHILDHOOD EDUCATION**ECH176****Child Development**

3 Credits. 3 Periods.

Study of human development from the prenatal stage through adolescence, with consideration of parent and adult roles in the life experience of the growing child. Independent observation of children and personal investigation into child-related issues in contemporary America. Prerequisites: None. Cross-reference: CFS176.

ECH270**Observing Young Children**

1 Credit. 1 Period.

Introduction to techniques of observing young children. Recording methods, interpretation and use of collected information including legal and ethical implications. Prerequisites: None.

ECH271**Arranging the Environment**

1 Credit. 1 Period.

Exploration of the influence of the environment on the behavior of young children. Indoor and outdoor spaces considered and analysis of environments practiced. Prerequisites: None.

ECH275**Literacy Development and the Young****Child**

1 Credit. 1 Period.

Literacy from birth through the early childhood years. Focus on developmentally appropriate ways to encourage speaking, listening, writing, and reading in the home and classroom. Prerequisites: None.

ECH279**Early Childhood Curriculum****Development**

1 Credit. 1 Period.

An intensive focus on the process of building curriculum units appropriate to the developmental needs and abilities of the young child. Design, use and evaluation of materials and activities. May be repeated for a total of four (4) credits. Prerequisites: None.

ECH282**Discipline/Guidance of Child Groups**

1 Credit. 1 Period.

Exploration of techniques for guiding children in groups with focus on individual child and adult needs for a disciplined environment. Prerequisites: None.

ECH287**Professional Development in Early Childhood Education**

1 Credit. 1 Period.

Emerging professionalism within the field of early childhood education. Consideration of job responsibilities, rewards, ethics and current issues facing practitioners. Includes assessment and career planning. Prerequisites: None.

ECONOMICS**ECN111****Macroeconomic Principles**

3 Credits. 3 Periods.

A descriptive analysis of the structure and functioning of the American economy. Emphasis on basic economic institutions and factors that determine national income and employment levels. Consideration given to the macroeconomic topics of national income, unemployment, inflation and monetary and fiscal policies. Prerequisites: None.

ECN112**Microeconomic Principles**

3 Credits. 3 Periods.

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 examined. Prerequisites: None.

EDUCATION**EDU205****Self Assessment for Teaching**

3 Credits. 3 Periods.

An exploratory course for students considering a teaching career. Examination of the field of education in the United States through field experiences, self-assessment activities and career information. Prerequisites: None.

EDU221**Introduction to Education**

3 Credits. 3 Periods.

Overview of education and educational institutions in our society, including current issues, responsibilities, and qualifications of

educators. Opportunity for students to assess their interest in this area. Prerequisites: None.
Course Note: Requires minimum of 30 hours of field experience in elementary or secondary classroom environment.

EDU222

Introduction to the Exceptional

Learner

3 Credits. 3 Periods.

Overview of the exceptional learner, one who differs from the average or normal, with emphasis on factors relating to current practices, identification, characteristics, and educational adaptations. Issues related to mildly disabled, severely disabled, emotionally and behaviorally disordered, mentally retarded, and gifted students. Prerequisites: None.

EDU230

Cultural Diversity in Education

3 Credits. 3 Periods.

Examination of the relationship of cultural values to the formation of the child's self-concept and learning style. Examination of the role of prejudice, stereotyping and cultural incompatibilities in education. Emphasis on preparing future teachers to offer an equal educational opportunity to children of all cultural groups. Prerequisites: None.

EDU250

Overview of the Community Colleges

3 Credits. 3 Periods.

The history, functions, organization and current issues in the community/junior college with emphasis on the Arizona community colleges. Prerequisites: None.

EDU282AA

Volunteerism for Education: A Service Learning Experience

1 Credit. 1 Period.

Service-learning field experience within educational systems, citizen advocacy groups, and human service organizations/agency. May be repeated for a total of six (6) EDU282 credit hours; may not repeat specific agency assignment for more than three (3) credit hours. Standard grading available according to procedures outlined in catalog. Prerequisites: Permission of instructor.

EDU282AB

Volunteerism for Education: A Service Learning Experience

2 Credit. 2 Period.

Service-learning field experience within educational systems, citizen advocacy groups, and human service organizations/agency. May be repeated for a total of six (6) EDU282 credit hours; may not repeat specific agency

assignment for more than three (3) credit hours. Standard grading available according to procedures outlined in catalog. Prerequisites: Permission of instructor.

EDU282AC

Volunteerism for Education: A Service Learning Experience

3 Credit. 3 Period.

Service-learning field experience within educational systems, citizen advocacy groups, and human service organizations/agency. May be repeated for a total of six (6) EDU282 credit hours; may not repeat specific agency assignment for more than three (3) credit hours. Standard grading available according to procedures outlined in catalog. Prerequisites: Permission of instructor.

EDU291

Children's Literature

3 Credits. 3 Periods.

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.

EDU292

The Art Of Storytelling

3 Credits. 3 Periods.

Explore the art and origin of storytelling. Provide a variety of storytelling techniques, styles and exercises to enhance the delivery of telling stories. Assist in the integration and application of storytelling to the learning environment in the classroom. Prerequisites: None.

EDU296WA

Cooperative Education

1 Credits. 5 Periods.

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.

EDU296WB

Cooperative Education

2 Credits. 10 Periods.

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.

EDU296WC

Cooperative Education

3 Credits. 15 Periods.

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.

ELECTRICITY

ELC101

Electricity for Industry

3 Credits. 3 Periods.

Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of air conditioning power sources. Single-phase motors, motor resistance and motor terminals. Function of electro-magnetic solenoids and transformers. National Electric Code.

ELC105

Electricity for Industry

3 Credits. 3 Periods.

Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of air conditioning 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. Cross-References: HVA105, FAC105

ELC105LL

Electricity for Industry Lab

3 Credits. 3 Periods.

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. Cross-References: FAC105LL, HVA105LL

ELC115**Motors Controls and Wiring****Diagrams**

3 Credits. 3 Periods.

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. Cross-References: FAC115, HVA115

ELC115LL**Motors, Controls, and Wiring****Diagrams Lab**

1 Credits. 3 Periods.

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. Cross-References: FAC115LL, HVA115LL

ELC119**Concepts of Electricity and Electronics**

3 Credits. 3 Periods.

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**Solid State Fundamentals**

3 Credits. 3 Periods.

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.

ELC210**AC Machinery and DC Machinery**

3 Credits. 3 Periods.

Principles and operation of AC(Alternating current) and DC(direct current) 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.

ELC217**Motor Controls**

3 Credits. 3 Periods.

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**Variable Frequency Drives**

3 Credits. 3 Periods.

Principles and operation of frequency controlled AC(Alternating current) 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**Programmable Controllers**

4 Credits. 6 Periods.

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: ELC105 and ELC115 and ELC119, or permission of instructor.

ELECTRONICS**ELT100****Survey of Electronics**

3 Credits. 3 Periods.

An introduction to the field of electronics for those who may not intend to specialize in electronics. Essentially nonmathematical in nature; includes familiarization with a wide range of electronic components. Application to electronic systems, such as radio transmitters and receivers - both AM and FM, television transmitters and receivers, logic control, and computers. Application also to automotive electronics. Prerequisites: None.

ELT101**Mathematics for Electronic I**

3 Credits. 3 Periods.

Basic principles of Algebra with applications to the analysis of electronic circuits. Emphasis on the use of the calculator for

conversions and DC(direct current) circuit problems. Prerequisites: None.

ELT102**Mathematics for Electronics II**

3 Credits. 3 Periods.

The study of simultaneous equations, quadratic equations, trigonometric relationships, periodic functions and logarithms as applied to AC circuit analysis. Application of the scientific calculator to technical problem solving in electronics. Prerequisites: ELT101 or equivalent.

ELT113**Basic Electronics**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Direct and alternating current electrical circuits. Theory and practical lab experience, using the appropriate test equipment and computer solutions. Ohm's Law, Kirchhoff's Laws, and various network theorems applied to the study and analysis of series, parallel, and series-parallel circuit configurations. Includes complex algebra, impedance, frequency response, and resonance. Prerequisites or Corequisites: ELT102 or equivalent.

ELT131**Digital and Logic Circuits**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Digital concepts and fundamentals, number systems and codes, Boolean algebra and combinational logic, logic reduction techniques, and logic hardware. Memories and programmable logic arrays.

Hands-on hardware and computer-aided logic design experiments. Prerequisites: ELT113 or permission of instructor. Cross-References: SMT131

ELT195**Solid State Electronics**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Characteristics and use of solid state devices in practical circuit applications. Circuit analysis techniques and computer simulations. Includes, diodes, transistors, four-layer devices, operational amplifiers, and interfacing devices. Prerequisites: ELT113 or departmental approval.

ELT251**Electronic Instrumentation**

LEC 3 Credits. 2 Periods.

LAB 0 Credits. 3 Periods.

Electronic instruments and their usage in measuring and analyzing electronic circuits. Includes both analog and digital meters, oscilloscopes, and digital logic analyzers. Covers automatic test equipment, various

transducers, and reliability requirements. Prerequisites: (ELT195 and ELT131) or departmental approval.

ENGLISH

ENG061

Basic Writing Skills

3 Credits. 3 Periods.

Emphasis on basic writing skills, including grammar and mechanics necessary to write clear and correct sentences in paragraphs. Prerequisites: Appropriate English placement test score, or ENG056 with a grade of "C" or better, or permission of department/division chair.

ENG071

Fundamentals of Writing

3 Credits. 3 Periods.

Emphasis on the fundamentals of sentence, paragraph, and multi-paragraph structure. Prerequisites: Appropriate English placement test score, or ENG056 with a grade of "C" or better, or ENG061 with a grade of "C" or better, or permission of department/division chair.

ENG101

First-Year Composition

3 Credits 3 Periods.

Standard English writing skills. Emphasis on expository composition. Prerequisites: Appropriate English placement test score or a grade of "C" or better, in ENG071.

ENG102

First Year Composition

3 Credits. 3 Periods.

Continued development of standard English writing skills. Introduction to research, note taking, organization, and documentation in the preparation and writing of a research paper. Prerequisites: ENG101 with a grade of "C" or better.

ENG107

First-Year Composition for ESL

3 Credits. 3 Periods.

Equivalent of ENG101 for students of English as a Second Language (ESL). Standard American English writing skills and emphasis on expository composition. Prerequisites: Appropriate ASSET/COMPASS placement test score, or a grade of "C" or better in ENG071 or ESL077. Course Note: Taking ESL040 and ESL042 may build skills tested by the ASSET/COMPASS placement.

ENG108

First Year Composition for ESL

3 Credits. 3 Periods.

Equivalent of ENG102 for students of English

as a Second Language (ESL). Continued development of standard English writing skills. Introduction to research, note taking, organization and documentation in the preparation and writing of a research paper. Not open to students who have completed ENG101. Prerequisites: Grade of "C", or better, in ENG107.

ENG111

Technical Writing

3 Credits. 3 Periods

Analysis, planning, organization, research, and writing of technical reports and oral presentations for specific job-related audiences. Preparation of recommendation and feasibility reports, proposals, and applications of graphics in documents and oral presentations. Prerequisites: ENG101 with a grade of "C", or better, or permission of instructor.

ENG200

Reading and Writing About Literature

3 Credits. 3 Periods.

Emphasis on critical analysis of various genres of literature; includes study of necessary terminology, introduction to methods of literary criticism, and practice in interpretation and evaluation. For English or English education majors and minors. Prerequisites: ENG102.

ENG210

Creative Writing

3 Credits. 3 Periods.

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.

ENG213

Introduction to the Study of Language

3 Credits. 3 Periods.

Study of language as code; phonetics, phonology, morphology, syntax, semantics; language acquisition; historical and sociolinguistics. Prerequisites: ENG102, or ENG111 with a grade of "C", or better, or permission of instructor.

ENG217

Personal and Exploratory Writing

3 Credits. 3 Periods.

Using writing to explore one's self and the world one lives in: emphasis on expository writing as a means of learning. Prerequisites: ENG101 and ENG102.

ENGLISH AS A SECOND LANGUAGE

ESL001BA

Basic ESL I: Personal Health and Safety

2 Credits. 2 Periods.

Listening, speaking, reading and writing in English at a basic level. Focus on survival skills related to personal health and safety when living in the United States. Introduction to elementary grammatical patterns. Prerequisites: None. Course Note: Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. May be repeated for a total of four (4) credits.

ESL001BB

Basic ESL I: Services & Employment

2 Credits. 2 Periods.

Listening, speaking, reading and writing in English at a basic level. Focus on survival skills related to services and employment when living in the United States. Introduction to elementary grammatical patterns. Prerequisites: ESL001BA or permission of instructor. Course Note: Credit (P) or no credit (Z). Standard grading available according to procedures outlined in catalog. May be repeated for a total of four (4) credits.

ESL010

English as a Second Language I:

Grammar

3 Credits. 3 Periods.

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 catalog. May be repeated for a maximum of six (6) credits. Prerequisites: Appropriate ESL placement test score.

ESL011

ESL I - Listening & Speaking

3 Credits. 3 Periods.

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 (6) credits. Prerequisites: Appropriate ESL placement test score or ESL002. Prerequisites: Appropriate ESL placement test score or ESL002

ESL020**English as a Second Language II:****Grammar**

3 Credits. 3 Periods.

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**ESL II - Listening & Speaking**

3 Credits. 3 Periods.

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**English as a Second Language III:****Grammar**

3 Credits. 3 Periods.

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**English as a Second Language III-****Listening and Speaking**

3 Credits. 3 Periods.

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 credits. Prerequisites: Appropriate ESL placement test score or ESL020 or ESL021 or ESL022 or RDG020.

ESL032**ESL III-Writing with Oral Practice**

3 Credits. 3 Periods.

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: ESL022 or appropriate ESL placement test score.

ESL040**English as a Second Language IV:****Grammar**

3 Credits. 3 Periods.

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 ESL301 or (ESL030AA, ESL030AB and ESL030AC).

ESL041**English as a Second Language IV:****Listening and Speaking**

3 Credits. 3 Periods.

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**ESL IV - Writing with Oral Practice**

3 Credits. 3 Periods.

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: ESL032 or appropriate ESL placement test score.

ESL050**Review Grammar For ESL**

3 Credits. 3 Periods.

Review of grammatical concepts for ESL 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 placement test score, or a grade of "C" or better in ESL010, or (ESL010AA, ESL010AB, and ESL010AC), or permission of instructor.

ESL051**Pronunciation Improvement for ESL****Speakers**

3 Credits. 3 Periods.

Individualized pronunciation practice and drills for English as a second language (ESL) speakers. May be repeated for a maximum of six (6) credits. Prerequisites: None.

ESL052**Job-Specific English as a Second****Language**

3 Credits. 3 Periods.

Using and understanding English for specific employment or vocational training. Includes English speaking, reading and writing skills. Prerequisites: Appropriate ESL test score or satisfactory completion of ESL041 or instructor approval.

ESL055**Basic Vocabulary for ESL IV**

1 Credit. 1 Period.

Emphasis on the acquisition of basic English vocabulary including identifying and pronouncing words related to people, medical/dental care, occupations, and other activities. May be repeated for a maximum of two (2) credits. Prerequisites: None.

ENGLISH HUMANITIES**ENH110****Introduction to Literature**

3 Credits. 3 Periods.

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.

ENH112**Chicano Literature**

3 Credits. 3 Periods.

Introduction to the works of Mexican-American writers of the Southwest. Samples poetry, fiction, and essays viewed in their relationship to American cultural heritage and to contemporary culture. Prerequisites: None.

ENH114**African-American Literature**

3 Credits. 3 Periods.

Survey of major African-American writers from Colonial period through the present; analysis of trends and movements within African-American literary history; analysis of literary types and selected works. Prerequisites: None.

ENH201**World Literature Through the Renaissance**

3 Credits. 3 Periods.

Includes a selection of the world's literary masterpieces in their cultural background, beginning with ancient Oriental and Occidental writings and concluding with Renaissance writings. Prerequisites: None.

ENH202**World Literature After the Renaissance**

3 Credits. 3 Periods.

Includes a selection of the world's literary masterpieces from the Renaissance to modern times. Prerequisites: None.

ENH205**Asian American Literature**

3 Credits. 3 Periods.

Survey of major Asian American writers. Examines literary types and selected works in their relationship to American cultural heritage and to contemporary culture. Prerequisites: ENG101 or ENG107.

ENH221**Survey of English Literature Before 1800**

3 Credits. 3 Periods.

Emphasizes the social and political backgrounds as well as the form and content of English literature from Anglo-Saxon times to the end of the eighteenth century. Prerequisites: None.

ENH230**Introduction To Shakespeare**

3 Credits. 3 Periods.

Introduces Shakespeare the playwright, the sonneteer, the linguist, and the citizen of the 17th century. Considers the major tragedies, comedies, histories, and sonnets; focuses on the use of language; and connects the writer to the time. Some emphasis on Shakespeare's influence through the centuries, noting parallels between the late 16th century and the late 20th century. Prerequisites: None.

ENH241**American Literature Before 1860**

3 Credits. 3 Periods.

Includes literature written prior to 1860 in the United States. Prerequisites: None.

ENH242**American Literature After 1860**

3 Credits. 3 Periods.

Includes literature written after 1860 in the United States. Prerequisites: None.

ENH251**Mythology**

3 Credits. 3 Periods.

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**Literature and Film**

3 Credits. 3 Periods.

Presents works of literature and their film versions and analyzes distinguishing techniques of each medium. Prerequisites: ENG101 or ENG107 or equivalent.

ENH256**Shakespeare on Film**

3 Credits. 3 Periods.

Presents cinematic versions of Shakespeare's plays and explains and analyzes how the dramatist's major tragedies, comedies, histories and romances have been presented on film. Prerequisites: None

ENH259**American Indian Literature**

3 Credits. 3 Periods.

Contemporary American Indian forms of literary expression. Selected oral traditions of American Indians. Trends and movements within American Indian literary history. Prerequisites: None.

ENH275**Modern Fiction**

3 Credits. 3 Periods.

Includes novel and short stories of modern writers which reflect significant themes of our time. Prerequisites: None.

ENH284**19th Century Women Writers**

3 Credits. 3 Periods.

Investigates major themes in literature by women writing in the 19th century including the nature of women's lives in the family, in work situations, and in society. Poetry, prose, essays and drama are examined with an emphasis on common themes. Prerequisites: None. Cross-Reference: WST284

ENH285**Contemporary Women Writers**

3 Credits. 3 Periods.

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. Cross-reference: WST285.

ENH291**Children's Literature**

3 Credits. 3 Periods.

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. Cross-reference: EDU291.

ENH294**Multicultural Folktales**

3 Credits. 3 Periods.

Study of multicultural folktales, exploring the impact of the oral tradition in American society and showing classroom applications. Prerequisites: None. Cross-References: EDU294, STO294

FACILITIES MANAGEMENT

FAC101**Refrigeration Components and Applications I**

2 Credits. 2 Periods.

Major components of refrigeration systems. Properties of refrigerants and piping practices. Prerequisites: None. Corequisites: FAC/HVA101LL or permission of instructor. Cross-References: HVA101

FAC104**Introduction to Facilities Management**

3 Credits. 3 Periods.

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**Electricity for Industry**

3 Credits. 3 Periods.

Electricity related to industrial applications. Operation of and safety protocols for the use of electrical meters. Electrical loads calculations and evaluation of air conditioning 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. Cross-References: HVA105, ELC105

FAC105LL**Electricity for Industry Lab**

1 Credits. 3 Periods.

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. Cross-References: ELC105LL, HVA105LL

FAC115**Motors, Controls and Wiring****Diagrams**

3 Credits. 3 Periods.

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. Cross-References: ELC115, HVA115

FAC115LL**Motors, Controls and Wiring****Diagrams Lab**

1 Credits. 3 Periods.

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. Cross-References: ELC115LL, HVA115LL

FAC185**Electro-Mechanical Devices**

4 Credits. 6 Periods.

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 ELT101, or GTC108, or equivalent, or permission of instructor. Corequisites: None. ELE100 or ELT100 suggested but not required. Cross-References: GTC185, HVA185

FAC186**Electro-Mechanical Devices**

3 Credits. 5 Periods.

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. Cross-References: HVA186

FAC210**Facilities Air Conditioning Systems**

3 Credits. 3 Periods.

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, HVA112 and ELC/FAC/HVA115) or permission of department. Corequisites: FAC/HVA210LL or permission of department. Cross-References: HVA210

FAC210LL**Facilities Air Conditioning Systems Lab**

1 Credits. 3 Periods.

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, HVA112 and ELC/FAC/HVA115), or permission of department. Corequisites: FAC/HVA210 or permission of department. Cross-References: HVA210LL.

FAC220**Controls and Instrumentation**

3 Credits. 3 Periods.

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: FAC/HVA220LL or permission of department. Cross-References: HVA220

FAC220LL**Controls and Instrumentation Lab**

1 Credits. 3 Periods.

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: FAC/HVA220 or permission of department. Cross-References: HVA220LL

FRENCH**FRE101****Elementary French I**

4 Credits. 4 Periods.

Basic grammar, pronunciation and vocabulary of the French language. Includes the study of French culture, practice of listening, speaking, reading and writing skills. Prerequisites: None.

FRE102**Elementary French II**

4 Credits. 4 Periods.

Continued study of grammar and vocabulary of the French language along with the study of French culture. Emphasis on speaking, listening, reading and writing skills. Prerequisites: FRE101 or equivalent.

FRE115**Beginning French Conversation I**

3 Credits. 3 Periods.

Conversational French. Basic sentence structure, pronunciation and vocabulary necessary to develop speaking ability in French. Designed for students seeking speaking and listening abilities with little emphasis on grammar. Prerequisites: None.

FIRE SCIENCE TECHNOLOGY

FSC113**Introduction to Fire Suppression**

3 Credits. 3 Periods.

Characteristics and behavior of fire, fire hazard properties of ordinary materials, extinguishing agents, fire suppression organization and equipment, basic fire fighting tactics, and public relations as affected by fire suppression. Prerequisites: None.

FSC202**Supervisory Training for Firefighters**

3 Credits. 3 Periods.

Administrative methods applied to the fire service, departmental organization, and personnel management. Includes fire alarm signaling systems, fire service planning, and relationships with other city departments. Prerequisites: None.

FOOD AND NUTRITION

FON100**Introductory Nutrition**

3 Credits. 3 Periods.

Basic nutrition concepts for health and fitness. Emphasizes current dietary recommendations for maximizing well-being and minimizing risk of chronic disease. Focuses on use of tables, food guides, and guidelines for making healthy food choices. Includes unique nutrition needs for selected stages of the lifecycle, methods for evaluating credibility of nutritional claims, principles of vegetarian nutrition, safe and economic use of supplements, principles of energy balance, basic elements of food safety, diet for exercise and sports, and personal dietary evaluation techniques. Not for pre-dietetics or other pre-professional majors. May not be taken for credit if credit has been earned in FON100AA and/or FON100AC. Prerequisites: None.

FON102**Legal, Ethical, and Regulatory Issues in Business**

2 Credits. 2 Periods.

Principles and techniques of menu planning for food service operations where food is served in quantity; includes applications for health care institutions, commercial kitchens, school cafeterias, and industrial facilities. Prerequisites: None.

FON118**Commercial Baking Techniques**

3 Credits. 5 Periods.

Principles and techniques for preparation, storage, and serving of bakery products. Includes breads, cakes, pies, pastry, cookies, fillings, and icings. Emphasis on practical experiences in a commercial bakery. Prerequisites: None.

FON144**Gourmet Foods**

3 Credits. 4 Periods.

The art and appreciation of gourmet foods, accompanied by preparation and appropriate services. Prerequisites: None.

FON179**Garde Manger**

3 Credits. 5 Periods.

Prepares students for employment in garde manger pantry positions in restaurants and resorts. Includes costing out and ordering food products; food and safety factors; preparing and garnishing pantry product. Emphasis on classical food presentation. Prerequisites: None.

FON182**American Regional Cuisine**

3 Credits. 5 Periods.

American regional food preparation applied to restaurants. Review principles of sanitation and safety. Explores history and customs, serving styles, and preparation techniques of foods unique to selected American regions. Emphasis on practical cooking experiences in a restaurant setting. American regions to include, but not limited to: Southern, Cajun/Creole, New England, Mid-West, and Pacific Coast. Prerequisites: None.

FON183**International Cuisines**

3 Credits. 5 Periods.

Gourmet international food preparation applied to restaurants. Review principles of sanitation and safety. Explores history and customs, serving styles, and preparation techniques of foods unique to selected international cultures. Emphasis on practical cooking experiences in a restaurant

kitchen. Cultures to include, but not limited to: Italian, German, Oriental, Middle Eastern, and Spanish. Prerequisites: None.

FON190**Professional Cooking Practicum**

7 Credits. 19 Periods.

Preparation of hot and cold foods in a commercial food service operation; experience in volume food production preparing salads, soups, stocks, sauces, entrees, starches, and vegetables; designed to develop knowledge and skills necessary to cook in a variety of commercial kitchens. Prerequisites: FON104, FON180, or departmental approval.

FON241**Principles of Human Nutrition**

3 Credits. 3 Periods.

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 or Corequisites: One year high school chemistry with grade of "C" or better, or CHM130 and CHM130LL, or BIO100, or BIO156, or BIO181, or approval of instructor.

GENERAL BUSINESS

GBS110**Human Relations in Business and Industry**

3 Credits. 3 Periods.

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**Business Calculations**

3 Credits. 3 Periods.

Review of basic arithmetic and application of mathematics to business problems, includes percentage, interest, discount, and markups. Prerequisites: None.

GBS151**Introduction to Business**

3 Credits. 3 Periods.

Characteristics and activities of current local, national, and international business. An overview of economics, marketing, management and finance. Prerequisites: None.

GBS205**Legal, Ethical, and Regulatory Issues in Business**

3 Credits. 3 Periods.

Legal theories, ethical issues and regulatory climate affecting business policies and decisions. Prerequisites: None.

GBS220**Quantitative Methods in Business**

3 Credits. 3 Periods.

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**Business Statistics**

3 Credits. 3 Periods.

Business applications of descriptive and inferential statistics, measurement of relationships, and statistical process management. Prerequisites: Grade of "C" or better in GBS220, or MAT172.

GBS233**Business Communication**

3 Credits. 3 Periods.

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**GTC106****Industrial Safety**

2 Credits. 2 Periods.

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. Cross-References: FAC106, MIT106, OSH106

GCT107**Technical Mathematics I**

3 Credits. 3 Periods.

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. Recommended for all technology students except electronics. Prerequisites: None. Cross-References: MET107

GCT108**Technical Mathematics II**

3 Credits. 3 Periods.

Fundamental algebraic operations. Problem solving involving metric measurement, gears, pulleys, simple mechanism problems. Areas and volume calculations of geometric figures. Essentials of trigonometry for solving right and oblique triangles. Prerequisites: GTC/MET107 or permission of instructor. Cross-References: MET108

GTC181**Introduction to Fluid Power**

3 Credits. 6 Periods.

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 ELT101, or GTC108, or equivalent Prerequisites: None.

GTC216**Properties of Materials**

3 Credits. 3 Periods.

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.

GEOLOGY**GLG101****Intro to Geology I: Physical Lecture**

3 Credits. 3 Periods.

A study of the kind and arrangement of materials composing the earth's crust and the geological processes at work on and within the earth's surface. Prerequisites: None.

GLG102**Introduction to Geology II - Historical Lecture**

3 Credits. 3 Periods.

Outlines the origin and history of the earth with emphasis on North America—its

dynamic, geographic, and climatic changes; animals and plants of the past; the evolution of life. Prerequisites: None.

GLG103**Introduction to Geology I: Physical Lab**

1 Credit. 3 Periods.

May accompany GLG101. Study of common rock-forming minerals, rocks, and maps. Prerequisites: None.

GLG104**Introduction to Geology II - Historical Lab**

1 Credit. 3 Periods.

May accompany GLG102. Study of geological structures and rocks, fossils, and geologic maps. May require field trips. Prerequisites: None.

GLG110**Geological Disasters and the Environment**

3 Credits. 3 Periods.

Acquaints students with the use and importance of geological studies as they apply to the interactions between people and the earth. Includes geological processes and hazards such as floods, earthquakes, and landslides; use of fossil fuels; mining of raw materials. Prerequisites: None.

GLG111**Geological Disasters and the Environment Lab**

1 Credit. 3 Periods.

May accompany GLG110. Basic geological processes and concepts. Emphasis on geology-related environmental problems concerning Arizona. Case histories and field studies. May require field trips. Prerequisites: None.

HEALTH CORE CURRICULUM**HCC109****CPR for Health Care Provider**

.5 Credit. .5 Period.

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 automated, external defibrillation and resuscitation equipment. Prerequisites: None. Cross-References: RES109

HCC130AA**Health Care Today**

.5 Credit. .5 Period.

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**Workplace Behavior in Health Care**

.5 Credit. .5 Period.

Health care and life values. Definition and importance of values, ethics, and essential behaviors in the workplace. Worker rights and responsibilities. Prerequisites: None.

HCC130AC**Personal Wellness and Safety**

.5 Credit. .5 Period.

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**Communication and Teamwork in the Health Care Organizations**

.5 Credit. .5 Period.

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**Legal Issues in Health Care**

.5 Credit. .5 Period.

Basic legal terminology used in the health care setting. Legal concepts related to health care employment, medical documentation, and communication. Introduction to regulatory requirements in health care. Prerequisites: None.

HCC130AF**Decision Making in the Health Care Setting**

.5 Credit. .5 Period.

Principles and application of the decision making model. Description and application of ethics and process improvement and the relationship of both to the decision making model. Prerequisites: None.

HCC146**Common Medical Terminology for Health Care Workers**

2 Credits. 2 Periods.

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.

HEATING, VENTILATING & AIR CONDITIONING**HVA112****Heating and Air Conditioning**

3 Credits. 3 Periods.

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: HVA103, HVA/ELC/FAC105. Corequisites: HVA112LL.

HVA112LL**Heating and Air Conditioning Lab**

1 Credits. 1 Periods.

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: HVA103, HVA/ELC/FAC105. Corequisites: HVA112.

HVA143**Load Calculation and Duct Design**

3 Credits. 3 Periods.

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.

HVA234**HVAC and Refrigeration Installation**

3 Credits. 3 Periods.

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**HVAC and Refrigeration Installation Lab**

1 Credits. 3 Periods.

Practices and application for the installation of residential and commercial refrigeration and air conditioning equipment. Actual installation problems used as the basis of discussion and code application. Prerequisites: ELC/FAC/HVA115 or permission of instructor. Corequisites: HVA234.

HISTORY**HIS100****History of Western Civilization to the Middle Ages**

3 Credits. 3 Periods.

Survey of the origin and development of Western civilization and its institutions from prehistory through the Ancient World and the Middle Ages. Prerequisites: None.

HIS101**History of Western Civilization Middle Ages to 1789**

3 Credits. 3 Periods.

Survey of origin and development of Western civilization and its institutions from the Renaissance and Reformation through Age of Enlightenment. Prerequisites: None.

HIS102**History of Western Civilization 1789 to Present**

3 Credits. 3 Periods.

Survey of origin and development of Western civilization and its institutions from French Revolution through the present. Prerequisites: None.

HIS103**U.S. History to 1870**

3 Credits. 3 Periods.

The political, economic, and social development of United States from Colonial through Reconstruction period. Prerequisites: None.

HIS104**U.S. History 1870 to Present**

3 Credits. 3 Periods.

The political, economic, and social development of United States from Reconstruction period up to present time. Prerequisites: None.

HIS105**Arizona History**

3 Credits. 3 Periods.

The prehistoric and contemporary Native American experience, Spanish colonial times, the Mexican National period, the U.S. federal territorial years, and Arizona's political and economic development during the twentieth century. Prerequisites: None.

HIS106**Southwest History**

3 Credits. 3 Periods.

Survey of Hispanic, Anglo, African-American and Native cultures of the peoples who have settled the American Southwest. Emphasis on cattle, mining, fur trade and transportation industries and role development of the region. Prerequisites: None.

HIS108**United States History 1945 to the Present**

3 Credits. 3 Periods.

Survey of American history from 1945 to the present. Focuses on the political, social, economic and cultural history of the United States from the end of World War II to the present time. Includes domestic developments and foreign policy. Prerequisites: None.

HIS145**History of Mexico**

3 Credits. 3 Periods.

Survey of the political, economic, and social forces which have shaped the development of Mexico from Precolumbian times to the present. Prerequisites: None.

HIS203**African-American History I**

3 Credits. 3 Periods.

History and cultural heritage of African-Americans from their beginnings in Ancient Africa through the experience of chattel slavery in the Americas to their eventual emancipation and participation in the American Civil War. Prerequisites: None.

HIS204**African-American History II**

3 Credits. 3 Periods.

Multifaceted experiences of African-American people from the post-Civil War period (1865) to the present, including the collective struggle for

freedom, equality, and self-determination in the United States. Prerequisites: HIS203.

HIS241**Latin American Civilization in the Colonial Period**

3 Credits. 3 Periods.

SA survey of the political, economic, and social forces which molded Latin American civilization in the Colonial Period. Prerequisites: None.

HIS273**US Experience in Vietnam****1945 - 1975**

3 Credits. 3 Periods.

Survey of the US experience in Vietnam, 1945-1975, in view of political, economic, and social forces of the Cold War. Prerequisites: None.

HOTEL RESTAURANT MANAGEMENT

HRM110**Introduction to Hospitality and Tourism Management**

3 Credits. 3 Periods.

A fundamental overview of the hotel, restaurant, and tourism segments of the hospitality and tourism industry. Provides an overview of the operational sectors of the industry and reviews management components and skills. Contains components to develop communication skills and a professional career plan. Prerequisites: None.

HRM120**Hotel Facility Management**

3 Credits. 3 Periods.

Fundamental duties and responsibilities of hotel facility management. Emphasis on detail tasks, including personnel, cleaning, purchasing, equipment, textiles, maintenance, and safety. Examines basic systems for hotel facility management record keeping. Prerequisites: None.

HRM126**Food Service Cost Systems**

2 Credits. 2 Periods.

Basic skills necessary to understand and utilize cost controls. Overview of systems for purchasing, storage, production control, and budgeting. Mechanical and mathematical details emphasized. Accounting process taught with aid of microcomputer. Introduction to standardized accounting software. Prerequisites: None.

HRM130**Guest Services Management**

3 Credits. 3 Periods.

Examines organization and management of the hotel front office and guest service operations. Explores key front office functions and related systems and skills necessary to ensure guest satisfaction and efficient operations. Prerequisites: None.

HRM140**Food Production Concepts**

3 Credits. 3 Periods.

Concepts related to preparation of hot foods, pantry, and bakery items for commercial kitchens. Emphasis on essential components and techniques of food production, food cost control, setting standards, ordering, and inventory. Prerequisites: None.

HRM220**Hospitality Managerial Accounting**

3 Credits. 3 Periods.

Study of financial statement analysis, asset management, ratio analysis, analytical techniques, and investment decision making. Emphasis on planning, budgeting, and management decisions. Prerequisites: ACC111 or ACC230.

HRM244**Quality Sanitation Management**

3 Credits. 3 Periods.

Systems approach to answering public health concerns, reducing sanitation risks, and ensuring satisfaction for guests, staff members, and owners. Definition and implementation of sanitation quality. Cost control, and risk reduction in a hospitality operation. Prerequisites: None.

HRM260**Hospitality Human Resource Management**

3 Credits. 3 Periods.

Examines concepts and applications of human resource management in the hospitality industry. Topics include recruitment, selection, training and evaluation. Emphasis on current management methods and productivity in the service environment. Prerequisites: GAM100/HRM110 or approval of instructor. Cross-reference: GAM260.

HRM270**Hospitality Marketing**

3 Credits. 3 Periods.

Essential skills of defining a service market, developing a market plan, and directing personnel to follow market plan. Emphasis on marketing in the hospitality industry

and understanding segmentation, positioning and promotion in that market. Prerequisites: None. Cross-reference: GAM270.

HRM275**Restaurant Management**

3 Credits. 3 Periods.

Overview of restaurant industry with focus on the major segments. Emphasis on developing plans for: marketing, accounting system, staffing, training, menu development and cost controls for restaurant operation. Special emphasis on safety and sanitation, and legal regulations in the restaurant industry. Prerequisites: None.

HRM280**Hotel and Restaurant Law**

3 Credits. 3 Periods.

Examines legal aspects of hotel and restaurant management. Uses case study approach to develop understanding of the laws and regulations governing guest relationships, contracts, employee relations, civil rights, alcoholic beverages, safety and product liability. Prerequisites: GAM100/HRM110.

HRM296WA**Cooperative Education**

1 Credits. 5 Periods.

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.

HRM298AA**Special Projects**

1 Credit. 1 Period.

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.

HUMANITIES**HUM190AA-AD****Honors Forum**

1 Credit. 1 Period.

Interdisciplinary studies of selected issues confronting the individual and society. Formal lectures followed by informal discussion 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 the Instructor.

HUM213**Hispanic Film**

3 Credits. 3 Periods.

Analysis of Hispanic film as art form and as social commentary. Prerequisites: None.

HUM250**Ideas and Values in the Humanities**

3 Credits. 3 Periods.

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**Ideas and Values in the Humanities**

3 Credits. 3 Periods.

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.

HUM292**The Art Of Storytelling**

3 Credits. 3 Periods.

Explore the art and origin of storytelling. Provide a variety of storytelling techniques, styles and exercises to enhance the delivery of telling stories. Assist in the integration and application of storytelling to the learning environment in the classroom. Prerequisites: None. Cross-References: EDU292, STO292.

INFORMATION TECHNOLOGY SECURITY**ITS100****Information Security Awareness**

2 Credits. 2 Periods.

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**Information Security Fundamentals**

4 Credits. 5 Periods.

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**Legal, Ethical and Regulatory Issues in Information Security**

3 Credits. 3 Periods.

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**Operating System Security**

3 Credits. 4 Periods.

In-depth examination of operating system security including Transmission Control Protocol/Data Encryption Standard (DES), Triple Data Encryption (3DES), Advanced Encryption Standard (AES), Pretty Good Privacy (PGP), and other encryption technologies (TCP/IP), Internet Protocol Security (IPSec) and Cisco Internetwork Operating Systems (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**Network Security**

3 Credits. 4 Periods.

Examination of techniques used to defend network security. Design and implementation of devices including firewalls and Intrusion Detection Systems (IDSs) and Virtual Private Network (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**Building Trusted Networks in the Enterprise**

3 Credits. 4 Periods.

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**Managing Trusted Networks in the Enterprise**

3 Credits. 4 Periods.

Establishment of trusted networks to ensure enterprise security. Techniques for planning and implementation of trusted networks including secure Wireless LANs (WLANs) and secure email. Emphasis on hands-on labs in both 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**Information Security Policy Development**

1 Credits. 1 Periods.

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**Information Security Risk Management**

1 Credits. 1 Periods.

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.

ITS230**Deploying Snort Intrusion Detection Systems (IDS)**

1 Credits. 2 Periods.

Intrusion Detection System (IDS). Examination of network intrusion detection concepts, principles and practices. Study of the mechanics and behaviors of Transmission Control Protocol/Internet Protocol (TCP/IP). Creation of filters and rules for network monitoring. Analysis of packet structure. Evaluation of intrusion detection system architectures. Detection and analysis of scans, vulnerabilities, exploits, and attacks. Identification of countermeasures. Architectural considerations for intrusion detection systems. Prerequisites: ITS110 or permission of instructor.

MANAGEMENT**MGT101****Techniques of Supervision**

3 Credits. 3 Periods.

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 presented. Prerequisites: None.

MGT175**Business Organization and Management**

3 Credits. 3 Periods.

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.

MGT229**Management and Leadership I**

3 Credits. 3 Periods.

Covers management concepts and applications for business, industry, and government organizations. Prerequisites: None.

MGT251**Human Relations in Business**

3 Credits. 3 Periods.

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**Personnel/Human Resources Management**

3 Credits. 3 Periods.

Human resource planning, staffing, training, compensating, and appraising employees in labor management relationships. Prerequisites: None. MGT101, or MGT175, or MGT229 suggested but not required.

MARKETING**MKT101****Introduction to Public Relations**

3 Credits. 3 Periods.

Emphasizes public relations techniques used both within and outside the business organization, including operation of a PR counseling firm. Prerequisites: None.

MKT271**Principles of Marketing**

3 Credits. 3 Periods.

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.

MANUFACTURING TECHNOLOGY**MET100AA****Tool Room I: Introduction to Machine Processes**

2 Credits. 2 Periods.

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**Tool Room II: Machine, Processes, and Employment**

2 Credits. 2 Periods.

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**Machine Processes, Theory and Application**

5 Credits. 9 Periods.

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 MET114 or minimum score of 80% on related competency evaluation.

MET105**Computer-Aided Drafting for Manufacturing**

3 Credits. 6 Periods.

Use of Computer Aided Drafting (CAD) equipment (hardware and software) in manufacturing and engineering drawings. Prerequisites: None.

MET109AA**Lathe I: Basic Manual Lathe Operations**

1 Credits. 2 Periods.

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.

MET109AB**Lathe II: Secondary Manual Lathe Operations**

1 Credits. 2 Periods.

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: MET109AA.

MET110**Survey of Manufacturing Materials**

1 Credits. 1 Periods.

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.

MET113AA**Mill I: Basic Machine Operations**

1 Credits. 2 Periods.

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.

MET113AB**Mill II: Vertical Mill Attachments**

1 Credits. 2 Periods.

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: MET113AA.

MET114**Machine Trades Print Reading**

3 Credits. 3 Periods.

Analysis and interpretation of technical drawings (prints) common to manufacturing and the machine trades. Types of print formats, line types, and view projections. Mathematical calculations for determining dimensions. Symbols and features present on prints. Prerequisites: None.

MET115**Geometric Dimensioning and Tolerancing-Technologist Level**

3 Credits. 3 Periods.

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: MET/GTC107 and MET114, or permission of program director. Corequisites: MET122.

MET122**Inspection Techniques**

3 Credits. 3 Periods.

Set-up and use of inspection tools, equipment, and procedures used in the industry. Use of ancillary equipment. Inspection planning forms and tables. Tool control activities and tool use certification process. Prerequisites: MET114. Corequisites: MET115 or permission of program director.

MET203**Machine Tools**

5 Credits. 9 Periods.

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 MET114.

MET206**CNC Programming**

3 Credits. 6 Periods.

Manual programming using computer generation of program media. Set-up and operation of a three axis machine. Study of management implications and advantages of computer numerical control (CNC). Prerequisites: GTC/MET102 or machine shop experience. Cross-References: GTC206

MET236**CAD/CAM Computer Numerical Control (CNC) Programming**

3 Credits. 6 Periods.

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. Cross-References: GTC236

MET260**Tooling and Fixturing**

3 Credits. 3 Periods.

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: Completion of Manufacturing Technology Certificate program or permission of instructor.

MET264**Manufacturing Process Planning**

3 Credits. 3 Periods.

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.

MATHEMATICS**MAT082****Basic Arithmetic**

3 Credits. 3 Periods.

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: None.

MAT090**Developmental Algebra**

5 Credits. 5 Periods.

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. Course Note: May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT091**Algebra/Anxiety Reduction**

4 Credits. 4 Periods.

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. Course Note: May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093. Course Note: May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT092**Introductory Algebra**

3 Credits. 3 Periods.

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. Course Note: May receive credit for only one of the following: MAT090, MAT091, MAT092, or MAT093.

MAT102**Mathematical Concepts/Applications**

3 Credits. 3 Periods.

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**Mathematics for Industrial****Applications I**

2 Credits. 2 Periods.

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: None.

MAT103AB**Mathematics for Industrial****Applications II**

2 Credits. 2 Periods.

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.

MAT108**Tutored Mathematics**

2 Credits. 2 Periods.

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. May be repeated for a maximum of 10 credits. Prerequisites: None. Corequisites: Concurrent enrollment in MAT082, MAT090, or MAT092, or MAT120, or MAT122, or MAT150, or MAT151, or permission of department chair.

MAT120**Intermediate Algebra**

5 Credits. 5 Periods.

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. Course Note: May receive credit for only one of the following: MAT120, MAT121, or MAT122.

MAT121**Intermediate Algebra**

4 Credits. 4 Periods.

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. Course Note: May receive credit for only one of the following: MAT120, MAT121, or MAT122.

MAT142**College Mathematics**

3 Credits. 3 Periods.

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications rather than on manipulative skills. Appropriate for the student whose major does not require college algebra or pre-calculus. Prerequisites: Grade of "C" or better in MAT120 or MAT121 or MAT122 or equivalent, or satisfactory score on District placement exam.

MAT151**College Algebra/Functions**

4 Credits. 4 Periods.

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.

MAT156**Mathematics for Elementary Teachers****I**

3 Credits. 3 Periods.

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.

MAT157**Mathematics for Elementary Teachers****II**

3 Credits. 3 Periods.

Focuses on measurement, geometry, probability and data analysis. Appropriate technologies, problem solving, reasoning, and proof are integrated throughout the course. Prerequisite: MAT156 or equivalent.

MAT172**Finite Mathematics**

3 Credits. 3 Periods.

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**Plane Trigonometry**

3 Credits. 3 Periods.

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.

MAT212**Brief Calculus**

3 Credits. 3 Periods.

Introduction to the theory, techniques and applications of the differential and integral calculus of elementary 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 equivalent, or satisfactory score on District placement exam.

MAT220**Analytic Geometry and Calculus I**

5 Credits. 5 Periods.

Topics from analytic geometry with special emphasis on inequalities and absolute value expressions, limits, continuity, the fundamental principles and formulae for differential and integral calculus along with their applications to geometry and mechanics, the mean value theorems and the fundamental theorem of calculus. May receive credit for only one of the following: MAT220 or MAT221. Prerequisites: Grade of "C" or better in (MAT150, or MAT151, or MAT152), and MAT182, or MAT187 or equivalent, or satisfactory score on District placement exam.

MAT230**Analytic Geometry and Calculus II**

5 Credits. 5 Periods.

Continuation of MAT220 including work on the elementary transcendental functions, techniques of integration, vector functions, and infinite series. May receive credit for only one of the following: MAT230 or MAT231. Prerequisites: Grade of "C" or better in MAT220 or MAT221 or equivalent.

MAT241**Calculus with Analytic Geometry III**

4 Credits. 4 Periods.

Vector-valued functions of several variables, multiple integration, introduction to vector analysis. Prerequisites: Grade of "C" or better in MAT230 or MAT231.

MAT262**Differential Equations**

3 Credits. 3 Periods.

Ordinary differential equations with applications including Laplace transforms with numerical methods. Prerequisites: Grade of "C" or better in MAT230, or MAT231, or equivalent.

MICROSOFT TECHNOLOGY

MST140**Microsoft Networking Essentials**

3 Credits. 4 Periods.

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.

MST145**Microsoft Client System****Administration**

3 Credits. 4 Periods.

Knowledge and skills to install, configure, customize, optimize, maintain, and troubleshoot the Microsoft Windows client operating system in a Microsoft networking environment. Preparation for Microsoft certification examination. Prerequisites or Corequisites: MST140 or permission of instructor.

MST150**Microsoft Windows Professional****Administration**

3 Credits. 4 Periods.

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.

MST150XP**Microsoft Windows XP Professional**

3 Credits. 4 Periods.

Knowledge and skills necessary to perform day-to-day administration tasks of Microsoft Windows XP Professional. Preparation for Microsoft certification examination. Prerequisites: None. CIS190, or CNT140, or MST140 suggested but not required.

MST152**Microsoft Windows Server**

4 Credits. 5 Periods.

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.

MST154**Microsoft Windows Network****Enterprise**

3 Credits. 4 Periods.

Knowledge and skills to plan, install, configure, customize, and integrate networks with Windows server operating system in a heterogeneous, multiple-domain environment. Preparation for Microsoft certification examination. Prerequisites: MST150 or permission of instructor. Corequisites: MST152 or permission of instructor.

MST155**Implementing Windows Network Infrastructure**

3 Credits. 4 Periods.

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**Implementing Windows Directory Services**

3 Credits. 4 Periods.

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.

MST170**Visual Basic Desktop Application Development**

4 Credits. 5 Periods.

Use of Visual Basic programming language to create database applications using Visual Data Access tools, ActiveX Controls, Component Objects, and Structured Query Language (SQL) Server database. Prerequisites: CIS159 or permission of instructor.

MST171**Microsoft FrontPage**

3 Credits. 4 Periods.

Knowledge and skills to analyze, design, build, and implement enterprise Web sites using Microsoft FrontPage. Includes use of ActiveX components, databases, and FrontPage server extensions. Prerequisites: (CIS233BA or CIS233DA) and MST170, or permission of instructor.

MST172**Visual Basic .NET Web Application Development**

4 Credits. 5 Periods.

Knowledge and skills to develop and implement Web-based applications using ASP.NET, Web forms, and the Microsoft.NET framework with Visual Basic. Preparation for Microsoft Certified Applications Developer (MCAD) certification examination. Prerequisites: (BPC/CIS133DA, or BPC/CIS133AA and BPC/CIS133BA and BPC/CIS133CA) and CIS259, or permission of instructor.

MST174**Microsoft Visual InterDev**

3 Credits. 4 Periods.

Web site programming tasks to create enterprise-level Web sites that use Component Object Model (COM) components on both the client and the server. Preparation for Microsoft Certified Solutions Developer (MCSD) examination. Prerequisites: (CIS233BA or CIS233DA) and MST170 or permission of instructor.

MST240**Microsoft Transmission Control Protocol/Internet Protocol (TCP/IP)**

3 Credits. 4 Periods.

Knowledge and skills necessary to install, configure, use, and support TCP/IP on Microsoft Windows NT. Preparation for Microsoft certification examination. Prerequisites: MST152 or permission of instructor.

MST242**Microsoft Exchange Server**

4 Credits. 5 Periods.

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**Microsoft SQL Administration**

3 Credits. 4 Periods.

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.

MST246**Implementing Microsoft Internet Explorer**

2 Credits. 3 Periods.

Strong foundation in the architecture and key features of Microsoft Internet Explorer. Set up, configure, use, and deploy Internet Explorer in a network environment, with particular emphasis on intranet use. Prerequisites: Any MST152 course or permission of instructor. Knowledge of HTML suggested but not required.

MST247**Microsoft Proxy Server**

2 Credits. 3 Periods.

Knowledge and skills required to install, configure, and administer Microsoft Proxy Server. Preparation for Microsoft

certification examination. Prerequisites: MST155 or MST240 or permission of instructor.

MST252**Microsoft Windows Network Upgrade**

3 Credits. 4 Periods.

Evaluate differences between current version of Microsoft Windows network operating system and upgraded version. Intended for Microsoft network administrators seeking upgrade training. Prerequisites: MST152 or permission of instructor.

MST253**Designing a Microsoft Windows 2000 Directory Services Infrastructure**

3 Credits. 4 Periods.

Provides students with the knowledge and skills necessary to plan and implement Microsoft Windows 2000 Directory Services in an enterprise environment. Prerequisites: any MST152 course or permission of instructor.

MST254**Microsoft SQL Server Design and Implementation**

3 Credits. 4 Periods.

Knowledge and skills required to design and implement databases using Microsoft SQL server. Preparation for Microsoft certification examination. Prerequisites: CIS259, or any MST152 course, or permission of instructor.

MST255**Designing Windows Network Infrastructure**

3 Credits. 4 Periods.

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**Designing Windows Network Security**

3 Credits. 4 Periods.

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.

MST270**Microsoft Solution Architectures**

3 Credits. 4 Periods.

Knowledge and skills to analyze business requirements in a given scenario and define technical solution architectures to optimize business results using Microsoft development tools. Prerequisites: (ACC230 or GBS151) and MST170, or permission of instructor.

MST298AC**Special Projects**

3 Credits 3 Periods.

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.

**MUSIC: HISTORY/
LITERATURE****MHL140****Survey of Music History**

3 Credits. 3 Periods.

Study of composers, compositions, styles, and periods in music history. Prerequisites: None.

MHL143**Music in World Cultures**

3 Credits. 3 Periods.

Non-European musical traditions including the study of music in rituals, musical instruments and the impact of cultures on musical styles. Prerequisites: None.

MHL145**American Jazz and Popular Music**

3 Credits. 3 Periods.

The study of cultural and social contributions to the evolution of American Jazz and popular music from the mid-1800's to present. Prerequisites: None.

MHL153**Rock Music and Culture**

3 Credits. 3 Periods.

History of Rock music and how cultural, social, political and economic conditions have shaped its evolution. Prerequisites: None.

MUSIC: PERFORMANCE**MUP225****Class Guitar I**

2 Credits. 3 Periods.

Emphasis on note-reading and folk-style harmonic accompaniment. Includes finger-style playing. Stresses development of efficient practicing techniques and proper sitting and hand positions. Prerequisites: None.

MUP226**Class Guitar II**

2 Credits. 3 Periods.

Note-reading range including second position and parts of higher positions. Classical, popular, Latin and other styles of music. Theory including scales, keys, and chord construction. Technical exercises of both hands. Prerequisites: MUP225 or permission of instructor.

**OCCUPATIONAL SAFETY
AND HEALTH****OSH101****Introduction to Environmental
Hazardous Materials Technology**

3 Credits. 3 Periods.

Overview of environmental hazardous materials technology. History of pollution leading to current legislation. Environmental effects of pollution. Overview of the regulatory framework. Career opportunities in handling and management of hazardous substances. Prerequisites: None.

OSH102**Introduction to Industrial Hygiene**

3 Credits. 3 Periods.

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.

OSH106**Industrial Safety**

2 Credit. 2 Periods.

Safety, health management and accident prevention in industrial work environment. Role of Occupational Safety and Health Administration (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. Cross-References: FAC106, GTC106, MIT106

OSH118**OSHA Standards and Regulations**

1 Credit. 1 Periods.

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.

**OFFICE
AUTOMATION SYSTEMS****OAS101AA****Computer Typing I: Keyboard Mastery**

1 Credit. 1.7 Periods.

Incorporates correct touch typing principles. Prerequisites: None.

OAS118**10-Key By Touch**

1 Credit. 1.7 Periods.

Touch system of numeric keys on ten-key pads. Prerequisites: None.

OAS120**Financial Record Keeping**

3 Credits. 3 Periods.

Computerized application of concepts and procedures of office record keeping; includes finance and personnel records, inventory systems, banking procedures and cash control; decision-making process for solving financial problems. Prerequisites: None.

PHILOSOPHY**PHI101****Introduction to Philosophy**

3 Credits. 3 Periods.

General consideration of human nature and the nature of the universe. Knowledge, perception, freedom and determinism, and the existence of God. Prerequisites: None.

PHI103**Introduction to Logic**

3 Credits. 3 Periods.

Informal logic, logical fallacies, elementary symbolic logic, analysis of argument forms, and construction of proofs for validity. Prerequisites: ENG101 or ENG107 or equivalent.

PHI201**History of Ancient Philosophy**

3 Credits. 3 Periods.

Historical survey of the intellectual history of the Greco-Roman world, focusing on the philosophical tradition and social/historical context. Prerequisites: None.

PHI213**Medical and Bio-Ethics**

3 Credits. 3 Periods.

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. Cross-References: REL213

PHI224**Political Philosophy**

3 Credits. 3 Periods.

Predominant figures and theories in Euroamerican political philosophy from Plato to contemporary social/political philosophers. Prerequisites: None.

PHI243**World Religions**

3 Credits. 3 Periods.

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. Cross-reference: HIS243, REL243.

PHI245**Introduction to Eastern Philosophy**

3 Credits. 3 Periods.

Fundamental theories of Indian and Chinese metaphysics, epistemology, ethics and aesthetics. Prerequisites: None.

PHYSICAL EDUCATION**HES154****First Aid/Cardiopulmonary Resuscitation**

3 Credits. 3 Periods.

Standard first aid and personal safety, including cardiopulmonary resuscitation, BLS. Designed to train community members in emergency care for the ill and injured, mouth-to-mouth resuscitation, CPR, and stabilization of victims with airway obstruction. Prerequisites: None.

PED101GF**Physical Activities: Cycling**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102**Physical Activities**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102AF**Physical Activities: Aerobics**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None

PED102AQ**Water Exercise**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102BP**Backpacking**

1 Credit. 2 Periods.

Covers basic skills and techniques of backpacking and the application of these to wilderness travel. Includes outdoor survival and evacuation techniques under a variety of environmental conditions. Prerequisites: None.

PED102CX**Basketball**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102JX**Golf**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102LK**Hiking**

1 Credit. 2 Periods.

Development of safe and effective hiking skills. Essentials and requirements for safe hiking; proper hiking clothing and attire; impact of hiking on the environment. Prerequisites: None.

PED102QR**Physical Activities: Physical Conditioning**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as

listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102SL**Physical Activities: Scuba Diving**

1.50 Credit. 2.50 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102SP**Physical Activities: Self Defense**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED102VR**T'ai Chi**

1 Credit. 2 Periods.

Teaches the fundamentals of Tai Chi including the moves, rules, and traditional discipline of the sport. Prerequisites: None.

PED102WT**Physical Activities: Volleyball**

1 Credit. 2 Periods.

Individual, dual, or team sports activities as listed in the schedule of classes. May be repeated for credit. Prerequisites: None.

PED113**Weight Training**

1.5 Credits 3 Periods

Weight training 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. Prerequisites: None.

PED114**Fitness**

1.5 Credits 3 Periods.

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.

PED115**Lifetime Fitness**

2 Credits. 4 Periods.

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 credit. Prerequisites: None.

PED118**Aerobics for Seniors**

1.5 Credits. 3 Periods.

Formatted for older adults with music and class tempo appropriate for those over age 55. Includes flexibility exercises, cardiovascular conditioning, and strengthening and toning exercises. Prerequisites: None.

PED202KC**Golf-Intermediate****PED214****Fitness for Living**

1 Credit. 1 Period.

Lifetime health and skill-related components of fitness to achieve total wellness. Topics include health and skill-related components of fitness; guidelines for health and fitness assessment; exercise safety and precautions; and exercise adherence and program planning. Prerequisites: None.

PED215**Fitness for Life**

3 Credits. 3 Periods.

Lifetime health and skill-related components of fitness to achieve total wellness. Topics include health and skill-related components of fitness, guidelines for health and fitness assessment, exercise safety and precautions, nutrition, weight control, cardiovascular risk reduction, psychology of fitness and wellness, consumerism, and overall self-management of personal health and lifestyle habits to achieve the highest potential for well-being. Prerequisites: None.

PHYSICAL SCIENCE**PHS110****Fundamentals of Physical Science**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Survey of the principles of physics and chemistry. Prerequisites: Grade of "C" or better in MAT091, or MAT092, or satisfactory score on Math placement exam.

PHYSICS**PHY101****Introduction to Physics**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

A survey of physics emphasizing applications of physics to modern life. Designed for students who need a course in physics in order to understand the physical basis of modern technology. Prerequisites: Grade of "C" or better in MAT091 or MAT092, or satisfactory score on Math placement exam.

PHY105**Basic Physics**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Survey of Newtonian mechanics to help students acquire a problem solving ability in physics generally. Primarily for students with either no physics background or a limited physics background who intend to take PHY115 and PHY116. Prerequisites: MAT152 and MAT182, or MAT187 or permission of instructor.

PHY111**General Physics I**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Includes motion, energy, and properties of matter. Prerequisites: Trigonometry or department consent. Course Note: Recommended for preprofessional and suggested for certain other majors.

PHY112**General Physics II**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Includes electricity, electromagnetism, and modern physics. Prerequisites: PHY105 or PHY111.

PHY115**University Physics I**

LEC 5 Credits. 4 Periods.

LAB 0 Credits. 3 Periods.

General physics course using calculus to develop the principles of mechanics and thermodynamics. Recommended for majors in the sciences and mathematics. Required for Engineering majors. Prerequisites: MAT220 or MAT221 or department consent. Corequisites: MAT230 or MAT231. One year High School physics or PHY111 and PHY112 is strongly recommended.

PHY116**University Physics II**

LEC 5 Credits. 4 Periods.

LAB 0 Credits. 3 Periods.

Principles of electricity, magnetism, waves, and optics. Required for Engineering majors. Prerequisites: PHY115 and (MAT230 or MAT231). Corequisites: MAT241.

PHY121**University Physics I: Mechanics**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Kinematics, Newton's laws, work, energy, momentum, conservation laws, dynamics of particles, solids, fluids, mechanical waves, and

sound. Prerequisites: MAT220 or MAT221 or department consent. One year of High School physics or PHY111 and PHY112 is strongly recommended.

PHY131**University Physics II: Electricity and Magnetism**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Electric charge and current, electric and magnetic fields in vacuum and in materials, and induction. AC circuits, displacement current, and electromagnetic waves. Prerequisites: MAT230 or MAT231 or department consent and PHY121. Corequisites: MAT241 or department consent.

PHY252**University Physics III: Thermodynamics, Optics, and Wave Phenomena**

LEC 4 Credits. 3 Periods.

LAB 0 Credits. 3 Periods.

Heat, entropy, and laws of thermodynamics; wave propagation; geometrical and physical optics; introduction to special relativity. Prerequisites: PHY131.

POLITICAL SCIENCE**POS110****American National Government**

3 Credit. 3 Period.

Study of the historical backgrounds, governing principles, and institutions, of the national government of the United States. Prerequisites: None.

POS125**Issues in World Politics**

3 Credits. 3 Periods.

Contemporary issues and factors in international relations. Stress conditions in civil order, trade, and international institutions. May be repeated for a total of six (6) credit hours. Prerequisites: None.

POS130**State and Local Government**

3 Credits. 3 Periods.

Survey of state and local government in the United States. Special attention on Arizona State government. Prerequisites: None.

POS220**U.S. and Arizona Constitution**

3 Credits. 3 Periods.

Examination of the United States Constitution and the constitution and government of the state of Arizona. Prerequisites: None.

POS221**Arizona Constitution**

1 Credit. 1 Period.

Examination of the Constitution of the State of Arizona. Equivalent to the second part of POS220. May not enroll in POS220 and POS221 concurrently. Prerequisites: None.

POS222**U.S. Constitution**

2 Credits. 2 Periods.

Examination of the United States Constitution. Equivalent to the first part of POS220. May not enroll in POS220 and POS222 concurrently. Prerequisites: None.

POS223**Civil Rights**

2 Credits. 2 Periods.

The historic background and current status of major civil rights issues in the United States. Prerequisites: None.

POWER PLANT TECHNOLOGY

PPT101**Hand and Power Tools**

1 Credits. 1 Periods.

Identification and use of hand and hand-held power tools used in a power plant. Tool construction and purpose. Maintenance of hand and power tools. Prerequisites: None.

PPT102**Introduction to Electricity**

3 Credits. 3 Periods.

Basic electrical terminology and concepts. Fundamentals of electrical theory. Calculations using electrical laws. Voltage and current production. Battery construction and applications. Principles of magnetism. Operation of motors, transformers, and generators. Electrical safety. Prerequisites: None.

PPT103**Print Reading and Plant Drawings**

1 Credits. 1 Periods.

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.

PPT115**Hydraulics and Pneumatics**

2 Credits. 2 Periods.

Hydraulic and pneumatic safety, physical concepts, and fluid laws. Hydraulic and

pneumatic system components and operation. Troubleshooting procedures of hydraulic and pneumatic systems. Prerequisites: None.

PPT118**Conduct of Maintenance**

1 Credits. 1 Periods.

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**Industry Events**

1 Credits. 1 Periods.

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**Plant Systems and Components I**

2 Credits. 2 Periods.

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**Plant Systems and Components II**

2 Credits. 2 Periods.

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**Measuring and Test Equipment**

1 Credits. 1 Periods.

Administrative controls for precision measurement. Use of precision measuring equipment. Emphasis on proper use, accurate reading, and calculations using precision measuring devices. Prerequisites: None.

PPT205**Rigging**

2 Credits. 2 Periods.

Safe and proper operation of lifting equipment. Weight calculations. Identification and proper location of rigging equipment. Hand signals and industry standards. Safe rigging practices. Inspection and maintenance procedures. Operation of pendant cranes. Prerequisites: None.

PPT206**Bearings**

1 Credits. 1 Periods.

Application, inspection and maintenance of plant bearings. Design and operation of sliding and anti-friction bearings. Function, design and applications of bearing seals. Reasons for bearing failure and related preventative maintenance procedures. Prerequisites: None.

PPT207**Heat Exchangers**

1 Credits. 1 Periods.

Heat exchanger theory including heat transfer and operating principles. Classification of heat exchangers including types, construction, and operation. Inspection of heat exchangers. Cleaning of exchanger tubes and shells. Cleaning of component parts. Troubleshooting tubes. Maintenance of exchangers. Prerequisites: None.

PPT208**Thermal Insulation**

0.50 Credits. 0.50 Periods.

Principles of heat transfer and insulation. Types and temperature ranges for insulation. Safe and proper handling of insulation materials. Practical experience in removing and installing insulation. Prerequisites: None.

PPT209**Pipefitting Auxiliaries II**

2 Credits. 2 Periods.

Purpose, terminology and system stress factors related to piping systems. Principles of fluid flow, and piping inspection procedures. Fabrication and installation of tubing materials, specific joints, and flanges. Basic piping system component maintenance, rework and installation procedures. Prerequisites: PPT109.

PPT210**Valve Maintenance II**

3 Credits. 3 Periods.

Fundamentals of hand lapping. Dexter and Unislip resurfacing tools. Valve packing: purpose, components and specifications. Valve survey data sheet. Procedure for field manufacture of die-formed packing rings. Function of the Optical Flat. Valve inspection. Gaskets and torquing techniques. Prerequisites: PPT110.

PPT211**Couplings**

0.50 Credits. 0.50 Periods.

Types, functions, and specific applications of couplings. Coupling removal and inspection procedures. Coupling rework and installation. Prerequisites: None.

PPT212**Control Valves and Actuators**

1 Credits. 1 Periods.

Modulating control terminology. Disassembly, inspection and assembly processes. Construction and operation of specific actuators. Maintenance of pneumatic and hydraulic valve actuators. Principles of operation, inspection and testing of control valves. Bench testing. Prerequisites: None.

PPT213**Pumps II**

3 Credits. 3 Periods.

Rotary, reciprocating and centrifugal pump operation. Positive displacement and metering pump operation. Diaphragm pulsafeder operation. Disassembly, inspection and reassembly of radially and axially split centrifugal pumps. Troubleshooting and lab safety. Prerequisites: None

PPT214**Machine Alignment**

3 Credits. 5 Periods.

Calculations and practical lab exercises using alignment principles. Determination of indicator sag and thermal growth. Obtaining readings for alignment or misalignment. Rim-face method of alignment stressed and practiced. Prerequisites: None.

PPT215**Relief and Safety Valves**

1 Credits. 1 Periods.

Concepts of pressure and pressure measurement. Components and operation of rupture discs, relief valves, and safety valves. Maintenance procedures. Prerequisites: None.

PPT217**Refueling Overview**

1 Credits. 1 Periods.

Destack and restack operations of the Reactor Vessel. Purpose and location of refueling equipment. Refueling operation including spent fuel, refueling machines and fuel transfer equipment. Safety. New fuel receipt, transfer and moving of spent fuel. Prerequisites: None.

PPT218**Lathe Operations**

2 Credits. 4 Periods.

Safe and proper operation of the lathe. Component and accessories and their functions. Cutting tools and methods. Processes of machining including mounting, aligning, knurling, grooving, turning, thread cutting, drilling, reaming boring, and tapping. Machining techniques using a chuck. Prerequisites: None.

PPT219**Milling Machine Operations**

2 Credits. 2 Periods.

Components of horizontal and vertical milling machines. Common milling machine accessories and cutters. Cutting speeds, feeds and depths for materials and cutters. Machine set up and operations. Common cutter failure. Operation of horizontal and vertical milling machines. Milling safety. Prerequisites: None.

PSYCHOLOGY**PSY101****Introduction to Psychology**

3 Credits. 3 Periods.

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.

PSY123**Psychology of Parenting**

3 Credits. 3 Periods.

The demonstration and application of psychological principles to the development and guidance of children and adolescents. Prerequisites: None.

PSY225**Psychology and Religion**

3 Credits. 3 Periods.

Analysis of psychological perspectives on the religious experience of the individual. Application of historical and contemporary psychological theories to the question of religious experience. Prerequisites: PSY101 or Permission of Instructor.

PSY230**Introduction to Statistics**

3 Credits. 3 Periods.

An introduction to the 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.

PSY235**Psychology of Gender Differences**

3 Credits. 3 Periods.

To assess historical and psychological perspectives on women and men and to evaluate contemporary viewpoints regarding the psychology of women and men. Prerequisites: PSY101 with a grade of "C" or better or permission of instructor.

PSY240**Developmental Psychology**

3 Credits. 3 Periods.

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.

PSY250**Social Psychology**

3 Credits. 3 Periods.

The scientific study of how people's thoughts, feelings, and behaviors are influenced by other people and situations. Includes how we think about ourselves and others, persuasion and influence, sexual and romantic attraction, friendship, and helping others, aggression and prejudice. Prerequisites: PSY101 with a grade of "C" or better or permission of the instructor.

PSY260**Personality Development**

3 Credits. 3 Periods.

Introduction to theories of personality with emphasis upon application of specific theories towards the understanding of individuals. Prerequisites: PSY101 with a grade of "C" or better or permission of instructor.

PSY266**Abnormal Psychology**

3 Credits. 3 Periods.

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.

PSY290AB**Research Methods**

4 Credits. 3 Periods.
0 Credits. 3 Periods. (Lab)
Planning, execution, analysis, and written reporting of psychological research. Surveys the literature, procedures, and instruments in representative areas of psychological research. Prerequisites: ENG101 or ENG107 or equivalent. Prerequisites or Corequisites: PSY230 (or equivalent) with a grade of "C" or better, or permission of instructor.

PUBLIC ADMINISTRATION

PAD101**Survey of Public Administration**

3 Credits. 3 Periods.
The history, present and future of public administration. Covers roles of public administrators, organizational relationships, intergovernmental relations and human resources as well as ethical issues, financial management, communication skills, and productivity issues. Prerequisites: None.

PAD201**Techniques of Municipal Administration**

3 Credits. 3 Periods.
City administration management. Covers techniques, practices and responsibilities of city staff including forces of change, administrative techniques and leadership. Prerequisites: PAD101 or PAD103 or permission of instructor.

READING ENGLISH AS A SECOND LANGUAGE

RDG008**Phonics**

3 Credits. 3 Periods.
Designed for students who are learning English as a second language. Includes the study of the speech sounds used in English as represented by the written symbols of the alphabet; recognition of spelling patterns and resulting pronunciation; and diacritical markings. Prerequisites: Reading placement score (ASSET) or permission of instructor

RDG010**Reading English as a Second Language II**

3 Credits. 3 Periods.
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**Reading English as a Second Language II**

3 Credits. 3 Periods.
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**Reading English as a Second Language III**

3 Credits. 3 Periods.
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**Reading English as a Second Language IV**

3 Credits. 3 Periods.
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.

READING EDUCATION

RDG081**Reading Improvement**

3 Credits. 3 Periods.
Designed to improve basic reading skills. Includes word recognition, prediction of contents of reading selections, and development of basic vocabulary. Emphasis on identifying main ideas and related details. Reviews following directions and the understanding of graphic materials. Prerequisites: Placement test scores, or permission of instructor.

RDG091**College Reading Skills I**

3 Credits. 3 Periods.
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: Reading placement test score (ASSET), or grade of "C" or better in RDG081, or permission of instructor.

RELIGIOUS STUDIES

REL101**Introduction to Religion**

3 Credits. 3 Periods.
Various religious expressions of humankind. Focuses on basic religious themes common to religions, such as encounter with the Holy, search for self and community, mystical illumination, spiritual discipline. Prerequisites: None.

REL202**Classics of Asian Religions**

3 Credits. 3 Periods.
Academic study of selected works from Hindu, Buddhist, Taoist and Confucian traditions. Study of cultural and concepts of the world, history, culture, and human nature as represented in these works. Prerequisites: None.

REL270**Classics of Asian Religions**

3 Credits. 3 Periods.
The nature and content of the Christian tradition developed over time, with overview of the New Testament, major historical trends and figures, major Christian ideas and practices, and survey of denominations. Prerequisites: None.

SIGN LANGUAGE

SLG101**American Sign Language I**

4 Credits. 4 Periods.
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.

SLG102**American Sign Language II**

4 Credits. 4 Periods.
Continued development of knowledge and language skills for communicating with deaf people who sign. Includes numbers, fingerspelling, and culture. Emphasis on enhancement of receptive sign skills and continued development of expressive sign skills. Application of rudimentary, syntactical,

and grammatical structure stressed with continued development of sign vocabulary. Prerequisites: SLG101, with a grade of "C" or better, or permission of department/division.

SMALL BUSINESS MANAGEMENT

SBS200

Small Business Operations

2 Credits. 2 Periods.

In-depth analysis of and individual plan development for the "day-to-day" problems encountered in the operation of a small business. Includes the development of an individual business operations plan including finance, purchasing, production scheduling, maintenance, shipping/receiving, personnel management and insurance/risk management requirements. Investigation of daily problems related to inventory control and business expansion. Prerequisites: None.

SBS202

Small Business Bookkeeping and Tax Preparation

1 Credit. 1 Period.

Introduces accounting and record-keeping with emphasis on practical use of financial data for the successful management of a small business. Develops an understanding of the accounting cycle and preparation of financial statements. Includes section on tax consequences and preparation for small business owners. Designed for the non-financially oriented owner/manager of a small business. Prerequisites: None.

SBS203

Financing and Cash Management for a Small Business

1 Credit. 1 Period.

Planning for and meeting the financial needs of the small business including cash flow planning, identification of financial needs and sources, equity and debt financing, and preparation of loan packages. Participants complete a financial plan for their individual company, with emphasis on cost controls, sales revenue projection, expense allocation, and inventory cost control. Day-to-day operational budgeting also included. Prerequisites: None.

SBS204

Small Business Marketing and Advertising

2 Credits. 2 Periods.

Introduction to marketing and advertising strategies and methods including business image, target market analysis, and customer buying behavior profile. Analysis and

selection of advertising/business promotion methods and timing. Methods of deciding products and market segment focus included. Design of an individual marketing and advertising/promotion plan. Prerequisites: None.

SBS214

Small Business Customer Relations

1 Credit. 1 Period.

Developing and improving customer relations for the small business. Planning and delivering quality customer service. Includes topics on attitudes of employees, customer perceptions and motivations, handling customer dissatisfaction, and developing customer, supplier, vendor, and distributor loyalty. Prerequisites: None.

SBS220

Internet Marketing for Small Business

2 Credits. 2 Periods.

Focus on "e-Commerce"-doing business on the Internet and planning a web site. Topics include: how the Internet can help growth and success of business; examples of successful marketing on the Internet; availability of Internet services; necessary hardware and software for marketing on the Internet; determining products/services appropriate for Internet marketing; budget constraints and on-going operations of the Internet site. Prerequisites: None.

SOCIETY AND BUSINESS

SBU200

Society and Business

3 Credits. 3 Periods.

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

SOC101

Introduction to Sociology

3 Credits. 3 Periods.

Fundamental concepts of social organization, culture, socialization, social institutions and social change. Prerequisites: None.

SOC140

Racial & Ethnic Minorities

3 Credits. 3 Periods.

Contemporary racial and ethnic intergroup relations emphasizing cultural origins, developments, and problems of minority

groups in the United States. Prerequisites: None.

SOC157

Sociology of Marriage & Family

3 Credits. 3 Periods.

The study of courtship, marriage, and family patterns, their historical development, their adaptation to a changing culture, and their impact on individuals. Prerequisites: None.

SOC212

Gender and Society

3 Credits. 3 Periods.

A study 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.

SOCIAL WORK

SWU102

Introduction to Social Work

3 Credits. 3 Periods.

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 student enrolled in the associate degree program of the social work curriculum. Prerequisites: Eligibility for ENG101 and CRE101.

SWU291

Social Service Delivery Systems

3 Credits. 3 Periods.

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 SWU271, or permission of the department.

SWU292

Effective Helping in a Diverse World

3 Credits. 3 Periods.

Introduction to professional helper communication skills with respect to cross-cultural practice and diversity issues, in a social work setting. Prerequisites: (SOC101 and SWU102) or SWU271 suggested but not required.

SPANISH

SPA101

Elementary Spanish I

4 Credits. 4 Periods.

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

Elementary Spanish II

4 Credits. 4 Periods.

Continued study of grammar and vocabulary of the Spanish language and study of the Spanish-speaking cultures. Emphasis on speaking, reading, and writing skills. Prerequisites: SPA101 or departmental approval.

SPA115

Beginning Spanish Conversation I

3 Credits. 3 Periods.

Conversational Spanish. Basic sentence structure, pronunciation and vocabulary necessary to develop speaking ability in Spanish. Designed for students seeking speaking and listening abilities with little emphasis on grammar. Prerequisites: None.

SPA116

Beginning Spanish Conversation II

3 Credits. 3 Periods.

Continued development of speaking and listening skills for effective communication in Spanish. Prerequisites: SPA115 or departmental approval.

SPA201

Intermediate Spanish I

4 Credits. 4 Periods.

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, two years of high school Spanish, or departmental approval.

SPA202

Intermediate Spanish II

4 Credits. 4 Periods.

Review of grammar, continued development of Spanish language skills with continued study of the Spanish-speaking cultures. Prerequisites: SPA201 or departmental approval.

STORYTELLING

STO282AC

Volunteerism for Education: A Service Learning Experience

3 Credits. 3 Periods.

Service-learning field experience within educational systems, citizen advocacy groups, and human service organizations/agency. May be repeated for a total of six (6) STO282 credit hours; may not repeat specific agency assignment for more than three (3) credit hours. Standard grading available according to procedures outlined in catalog. Prerequisites: Permission of instructor.

STO292

The Art of Storytelling

3 Credits. 3 Periods.

Explore the art and origin of storytelling. Provide a variety of storytelling techniques, styles and exercises to enhance the delivery of telling stories. Assist in the integration and application of storytelling to the learning environment in the classroom. Prerequisites: None. Cross-References: EDU292, HUM292.

STO293

The Art of Storytelling II

3 Credits. 3 Periods.

Further exploration of the art of storytelling. Provide opportunities for the expansion of storytelling skills and a deeper appreciation of storytelling and its applications. Prerequisites: EDU292 or HUM292 or STO292.

THEATRE

THE111

Introduction to Theatre

3 Credits. 3 Periods.

A survey of theatre, including basic elements and principles of production, styles, and/or historical perspectives of theatre, dramatic literature, and criticism. Prerequisites: None.

THE220

Modern Drama

3 Credits. 3 Periods.

Analysis of dramatic literature studied within political, historical, and cultural contexts and examined from the perspective of the playwright's structure and style. Prerequisites: ENG101 or ENG107 or equivalent.

THEATRE PERFORMANCE/ PRODUCTION

THP112

Acting I

3 Credits. 4 Periods.

Fundamental techniques and terminology of acting through physical and vocal expression, improvisation, and monologue and scene work. Emphasis on characterization. Prerequisites: None.

THP212

Acting II

3 Credits. 4 Periods.

Fundamental techniques of acting through script analysis, rehearsal, and performance. Prerequisites: THP112 or departmental approval.

TOTAL QUALITY MANAGEMENT

TQM101

Quality Customer Service

3 Credits. 3 Periods.

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

Total Quality Concepts

2 Credits. 2 Periods.

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.

TQM204

Team Roles and Dynamics

3 Credits. 3 Periods.

Focuses on basic concepts and tools associated with quality improvement to help teams function effectively. Participants use theory and practice to work as a team, plan, and conduct good meetings, manage logistics and details, gather useful data, analyze the data, communicate clearly and persuasively ideas and results with confidence and impact, and implement change. Prerequisites: None.

TQM214**Principles of Process Improvement**

2 Credits. 2 Periods.

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.

TQM230**Teamwork Dynamics**

2 Credits. 2 Periods.

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.

WELDING TECHNOLOGY

WLD101**Welding I**

3 Credits. 6 Periods.

Principles and techniques of electric arc and oxyacetylene welding and cutting. Provides technical theory and basic skill training in these welding processes. Prerequisites: None.

WLD106**Arc Welding**

5 Credits. 8 Periods.

Electric welding with emphasis on metallic arc welding in out-of-position practice and procedures. Prerequisites: None.

WLD201**Welding II**

3 Credits. 6 Periods.

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

WLD206**Advanced Welding- Heliarc and Wire Feed**

5 Credits. 8 Periods.

Instruction in theory and practice on tungsten inert gas and wire feed welding. Welding procedures on ferrous and nonferrous metals. Set up and operation of all types of machines used in tig and mig welding. Prerequisites: WLD106 or departmental permission.

WLD208**Advanced Arc Welding- Certification**

5 Credits. 8 Periods.

Advanced metallic arc welding emphasizing out-of-position welding in preparation for certification. Includes various test methods. Provides training on machine flame cutting and gouging and arc air cutting and gouging. Prerequisites: WLD106 or permission of instructor.

WOMEN STUDIES

WST100**Women and Society**

3 Credits. 3 Periods.

Introduction to critical issues in women's studies. Prerequisites: None.

WST128**Law and Violence Against Women**

3 Credits. 3 Periods.

Covers cases and materials on systems of oppression particularly as related to women in our society. Areas covered include battering, sexual harassment, sexual assault, prostitution, and pornography as exemplified in present-day society. Designed to give students the ability to identify problems of violence against women and participate in current societal discourse on various ways to resolve them. Prerequisites: None. Cross-References: AJS128

WST209**Women and Films**

3 Credits. 3 Periods.

Analysis of images of women in films from both historical and contemporary perspectives. Prerequisites: None. Cross-References: HUM209