

Educational Courses

Credit Courses

Credit Course Numbering System and Prerequisites

Courses numbered from 001-099 are those unique to the community college, are considered developmental in nature, are not transferable, and do not satisfy degree requirements.

Courses numbered 100-199 are considered to be on the freshman level. Courses numbered 200-299 are considered to be on the sophomore level.

NOTE: SUN System: SUN# (Shared Unique Number) is a prefix and number assigned to certain courses that represents course equivalency at all Arizona community colleges and the three public universities, no matter what prefix or number is used at the individual institutions. Learn more at www.aztransfer.com/sun.

Sample course listing:

		Introduction to American Indian Studies	/3 cr. hrs., /3 periods	/3 periods (3 lec.)
AIS	101	course title	semester hours of credit	hours of lecture and/or lab per week
course prefix	course number	course title	semester hours of credit	hours of lecture and/or lab per week

A student registering for a course must meet the prerequisites or otherwise satisfy the instructor of his or her preparation to take the course. After notification, an instructor may withdraw a student who does not have the proper prerequisites for the class as stated in the catalog. Prerequisites may be waived by the instructor.

Consult the semester Schedule of Classes for specific offerings each semester.

Topics Courses

Courses designated with the numbers **098, 198, 298** are courses created by a Pima Community College faculty member to offer a specific subject not found in the regular courses of the college catalog.

Students should be aware that these courses are NOT designed for transfer to a university, nor does Pima Community College articulate them with any university to seek transfer status.

Legend for Courses

HC/HN	.....	Honors Course
IN/IH	.....	Integrated lecture/lab
LB	.....	Lab
LC/CA/CB	.....	Clinical Lab
LS	.....	Skills Lab
WK	.....	Coop Work

Listing of Course Prefixes

Academic and Critical Literacy	ACL
Accounting	ACC
Administration of Justice	AJS
Agriculture	AGR
American Indian Studies	AIS
American Sign Language	ASL
Anthropology	ANT
Arabic	ARB
Archaeology	ARC
Art	ART
Art for Personal Development	APD
Astronomy	AST
Automated Industrial Technology	AIT
Automotive Technology	AUT
Autonomous Vehicle Technology	AUV
Aviation Technology	AVM
Avionics Technician Training	ATT
Behavioral Health Services	BHS
Biology	BIO
Building and Construction Technology	BCT
Business	BUS
Chemistry	CHM
Child Development Associate	CDA
Chinese	CHI
Clinical Research Coordinator	CRC
Communication	CMN
Computer-Aided Drafting/Design	CAD
Computer Information Systems	CIS
Computer Software Applications	CSA
Crime Scene Management	CSM
Culinary Arts	CUL
Dance	DNC
Dental Assisting Education	DAE
Dental Hygiene	DHE
Dental Laboratory Technology	DLT
Digital Arts	DAR
Early Childhood Education	ECE
Economics	ECN
Education	EDU
Education – General/Post Degree	EDC
Education – Special/Post Degree	ESE
Educational Technology Training	ETT
Electrical Utilities Technology	EUT
Emergency Medical Technology	EMT

Engineering	ENG
English as a Second Language	ESL
Fashion Design and Clothing	FDC
Finance	FIN
Fire Science	FSC
Fitness and Sport Sciences	FSS
Fitness and Wellness	FAW
Food Science and Nutrition	FSN
French	FRE
Game Design	GAM
Gender and Women's Studies	GWS
General Technical Writing	GTW
General Technologies Mathematics	GTM
Geography	GEO
Geology	GLG
Geospatial Information Studies	GIS
German	GER
Global Studies	GLS
Health Care	HCA
Health Education	HED
Health Information Technology	HIT
History	HIS
Honors Program	HON
Hotel and Restaurant Management	HRM
Human Resources Management	HRS
Humanities	HUM
Industrial and Commercial Technologies	ICT
Industrial Maintenance	IMO
Integrated College Skills	ICS
Interpreter Training	ITP
Japanese	JPN
Journalism	JRN
Korean	KOR
Landscape Technician	LTP
Law Enforcement Academy	LEA
Library and Information Sciences	LIS
Literature	LIT
Logistics and Supply Chain Management	LGM
Machine Tool Technology	MAC
Management	MGT
Marketing	MKT
Mathematics	MAT
Mechatronics	MCT
Medical Assistant	MDA
Medical Laboratory Technician	MLT
Mexican-American Studies	MAS
Music	MUS
Music Studio Instruction	MUP
Nursing	NRS
Nursing Assistant	NRA

Paralegal	PAR
Pharmacy Technology	PHT
Philosophy	PHI
Phlebotomy	PHB
Physics	PHY
Political Science	POS
Psychology	PSY
Radiologic Technology	RAD
Reading	REA
Religion	REL
Reserve Officers Training Corps – ROTC Air Force	MLA
Reserve Officers Training Corps – ROTC Army	MLS
Reserve Officers Training Corps – ROTC Navy	NSP
Respiratory Therapy	RTH
Science for Teachers	SCT
Social Services	SSE
Sociology	SOC
Solar Technologies	SLR
Spanish	SPA
Student Success	STU
Surgical Technology	SGT
Technology	TEC
Theater	THE
Therapeutic Massage	TMA
Translation and Interpretation Studies	TRS
Travel and Tourism Operations	TVL
Truck Driver Training	TDT
Veterinary Technology	VET
Welding	WLD
Wellness Education	WED
Writing	WRT
Yaqui	YAQ

Academic and Critical Literacy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ACL 080 Academic and Critical Literacy

5 cr. hrs. 5 periods (5 lec.)

Foundational skills in academic reading and writing strategies. Includes improvement in personal written vocabulary and grammar, analytical and evaluative reading comprehension, appropriate drafting and revising conventions, critical thinking skills and techniques.

Prerequisite(s): Placement based on assessment.

Accounting

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ACC 100 Practical Accounting Procedures

3 cr. hrs. 3 periods (3 lec.)

Introduction to accounting systems for small businesses. Includes different types of accounts, the general journal and general ledger, adjusting entries, closing entries and the post-closing trial balance; bank accounts, cash funds, and internal control; employee earnings and deductions, accounting for cash and payroll, sales and purchases, cash receipts and cash payments, work sheet and adjusting entries; and financial statements, and closing entries.

ACC 150 Payroll Accounting

3 cr. hrs. 3 periods (3 lec.)

Current practices in payroll accounting and tax reporting. Includes payroll and personnel records, computing and paying wages and salaries, analyzing and journalizing payroll transactions, payroll systems, and payroll projects.

Prerequisite(s): ACC 100 or 211 (or concurrent enrollment in ACC 100 or 211).

ACC 200 Computerized Accounting I

3 cr. hrs. 3 periods (3 lec.)

Fundamental accounting applications using commercial applications software. Includes commercial accounting program modules, accounting projects, electronic spreadsheet as the accounting tool, and accounting information on the Internet.

Prerequisite(s): ACC 100, ACC 150 (or concurrent enrollment in ACC 150) and CSA 110 (or concurrent enrollment in CSA 110).

Information: Prerequisites may be waived with consent of instructor.

ACC 204 Individual Tax Accounting

3 cr. hrs. 3 periods (3 lec.)

Individual income taxes with concentration at federal level. Includes history, assumptions and objectives of federal income tax law. Also includes determination of filing status, exemptions, inclusions, exclusions, adjustments, deductions, credits, tax liability, and reporting requirements; completion of tax returns, and tax planning; use of commercial tax-preparation software; determination of sole proprietorship income and taxes thereon.

ACC 205 Corporate and Partnership Tax Accounting

4 cr. hrs. 4 periods (4 lec.)

Introduction to taxation of business entities and transactions. Also includes taxation of property transactions; various tax issues that apply to different tax entities; tax administration and practice; and the taxation effects of formation, operation, and dissolution of corporations, partnerships, S corporations, trusts and estates.

ACC 206 Topics in Tax Accounting

3 cr. hrs. 3 periods (3 lec.)

Introduction to advanced tax issues facing both individual taxpayers and various taxable entities, including: corporations, partnerships, estates, and trusts. Also includes an emphasis the U.S. tax code and regulations that relate to these parties, examining the complex tax transactions that may affect them. Also included practice and procedure, taxpayer representation, and the filing process.

Information: This course assists in preparation for the IRS Enrolled Agent exam.

ACC 207 IRS Enrolled Agent Exam**3 cr. hrs. 3 periods (3 lec.)**

Advanced tax theory and its application in different areas and situations as they relate to passing the IRS Enrolled Agent Exam. Includes individual tax, corporate tax, advanced topics in taxation of individuals, sole proprietorships, partnerships, corporations, fiduciaries, estates, trusts, gifts, representation, practices, and procedures.

Information: This course is designed for students that have taken ACC 204, 205, and 206, OR for tax professionals with extensive experience wishing to take the Enrolled Agent Exam. Upon successful completion of this course, students will be able to sit for the IRS Enrolled Agent exam.

ACC 211 Financial Accounting**3 cr. hrs. 3 periods (3 lec.)**

Introduction to accounting as a service activity, analytical discipline, and information system. Includes financial statements and the accounting profession, recording accounting and transactional data, merchandising operations, internal control and ethical issues, asset reporting, reporting and analyzing liabilities and stockholder's equity, statements of cash flow, and performance measurement.

Prerequisite(s): With a C or better: BUS 151, GTM 105, or MAT 092 or completion of module 26 in MAT 089A or 089B or placement into MAT 097 or higher.

ACC 212 Managerial Accounting**3 cr. hrs. 3 periods (3 lec.)**

Accounting information for managers. Includes managerial accounting environment, systems design, cost behavior analysis and use, profit planning, standard costs, and decision making.

Prerequisite(s): ACC 211 with a C or better.

ACC 221 Intermediate Accounting I**3 cr. hrs. 3 periods (3 lec.)**

Comprehensive coverage of financial accounting topics. Includes the accounting environment, accounting information systems, present value applications to accounting problems, cash control, receivables and investments. Also includes inventory valuation methods, tangible fixed assets, intangible assets, current and long-term liabilities, stockholder's equity, revenue recognition, expense, and other comprehensive income.

Prerequisite(s): ACC 211.

ACC 233 Cost Accounting**3 cr. hrs. 3 periods (3 lec.)**

Analysis of cost data for management planning, coordination and control. Includes the role of accounting information in management decision making, the cost function, cost-volume-profit analysis, relevant information for decision making, job costing, process costing, and costing methods. Also includes measuring and assigning support department costs, static and flexible budgets, standard costs and variance analysis, and strategic investment decisions.

Prerequisite(s): ACC 212.

ACC 250 Certified Bookkeeper**3 cr. hrs. 3 periods (3 lec.)**

Advanced topics in the areas of accruals, deferrals, and the adjusted trial balance; correcting common transaction recording errors and the bank reconciliation; payroll accounting and the related Federal and State payroll law requirements; accounting for depreciation with regard to financial and tax accounting purposes; inventory valuation methods; and internal controls and fraud prevention.

Prerequisite(s): ACC 100 or 211.

Information: Upon successful completion, students will be able to sit for a national exam administered by the American Institute of Professional Bookkeepers (AIPB).

ACC 260 Principles of Fraud Examination**3 cr. hrs. 3 periods (3 lec.)**

Overview of the field of fraud examination and examination methodology and detailed examination of the most prevalent fraud schemes. Includes categories of occupational fraud and abuse, asset misappropriation, corruption schemes, accounting principles and fraud examination strategies, fraudulent financial statement schemes, and interviewing witnesses.

Prerequisite(s): ACC 211.

ACC 273 Governmental Accounting**3 cr. hrs. 3 periods (3 lec.)**

Accounting practices and procedures used in governmental units. Includes accounting and financial reporting for governmental and not-for-profit entities, operating state accounts, operating activities, general capital assets and projects, general long term liabilities and debt service, business-type activities of state and local governments, fiduciary activities, financial reporting of state and local governments, and accounting for the non-profit sector.

Prerequisite(s): ACC 211.

ACC 281 QuickBooks Computer Accounting**3 cr. hrs. 3 periods (3 lec.)**

Hands-on experience utilizing current QuickBooks software with accounts receivable, accounts payable, inventory and payroll features to set up and maintain accounting records for a small business.

Prerequisite(s): ACC 100, 150, and 211 (or concurrent enrollment in ACC 211).

Information: Prerequisite(s) may be waived with consent of instructor.

ACC 290 Internship in Accounting**3 cr. hrs. 9 periods (9 lab)**

Supervised internship in an accounting workplace. Includes experiences supervised by a professional in the field.

Information: Consent of instructor is required before enrolling in this course.

ACC 292 Volunteer Income Tax Preparation Field Experience**3 cr. hrs. 9 periods (9 lec.)**

Supervised placement in a volunteer income tax preparation program. Includes tax preparer trainings and preparing free basic income tax returns with electronic filing to qualified individuals. Also includes regular supervisory service with an instructor and agency supervisors.

Information: This course requires 135 hours of training in a volunteer income tax preparation program.

ACC 296 Independent Study in Accounting**.25-3 cr. hrs. .25-3 periods (.25-3 lec.)**

Independent study projects or special interest areas in accounting under the supervision of a faculty member.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Administration of Justice

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AJS 101 Introduction to Administration of Justice Systems**3 cr. hrs. 3 periods (3 lec.)**

History and philosophy of administration of justice in America. Includes identifying the various subsystems, role expectations, and their interrelationships, theories of crime, punishment and rehabilitation, ethics, education and training for professionalism in the system, and career opportunities related to local criminal justice agencies.

AJS 109 Criminal Law**3 cr. hrs. 3 periods (3 lec.)**

Historical development and philosophy of law and constitutional provisions. Includes definitions, classifications of crime and their application to the system of administration of justice, legal research, study of case law, methodology, and concepts of law as a social force.

AJS 115 Criminal Procedures**3 cr. hrs. 3 periods (3 lec.)**

Overview of the criminal justice system used in the United States to adjudicate criminal cases. Includes implications for defendant's rights, the arrest process, the prosecuting attorney, the defense attorney, courts, grand jury, trial jury, judicial process, and its aftermath.

Prerequisite(s): AJS 101 and 109.

AJS 123 Corrections as a Process**3 cr. hrs. 3 periods (3 lec.)**

Overview of corrections as a process and its appropriate place in the criminal justice system. Includes the study of inmate characteristics, prison culture, correctional history and philosophies. Also includes community corrections, supervision and career opportunities in corrections.

AJS 124 Ethics and the Administration of Justice**3 cr. hrs. 3 periods (3 lec.)**

Exploration of ethical issues and the justice system. Includes elements of moral and ethical behavior, principles of justice, and theories of moral development. Also includes ethics of the police, courts, corrections, and modern issues in the administration of justice.

AJS 201 Rules of Evidence**3 cr. hrs. 3 periods (3 lec.)**

The origin, development, philosophy and constitutional basis of evidence. Includes constitutional and procedural considerations affecting arrest and search and seizure. Also includes degrees of evidence and rules governing admissibility, judicial decisions interpreting individual rights, and case studies.

Prerequisite(s): AJS 115.

AJS 204 Criminal Investigations**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals of modern criminal investigation. Includes procedures and skills in search and investigation, conduct at the crime scene, collection and preservation of evidence, developing sources of information, preparation of cases for court prosecution, and report-writing requirements for administration and court use.

Prerequisite(s): AJS 115

AJS 205 Forensic Pathology and Death Investigation**3 cr. hrs. 3 periods (3 lec.)**

Basic principles of forensic pathology, demonstrating the use of autopsy findings and death scene investigation to determine the cause and manner of death for deaths that fall under the jurisdiction of the medical examiner in the state of Arizona. Includes postmortem changes; sudden and unexpected, suspicious and violent deaths; and postmortem identification.

Prerequisite(s): AJS 204.

AJS 210 Police Community and Human Relations**3 cr. hrs. 3 periods (3 lec.)**

Survey of the police officer's role in attaining and maintaining public support. Includes recognition and understanding of community problems, community action programs, methods of coping with crisis situations, ethnic and minority cultures, various environments, crime prevention, and police operations in relation to these cultures and environments.

AJS 212 Juvenile Justice Procedures**3 cr. hrs. 3 periods (3 lec.)**

The course will examine the causes, responses and prevailing legal and social practices concerning delinquency in America. Includes issues pertaining to the family, schools, gang membership, drug use and youth victimization. Also includes the juvenile justice system including the history and philosophy of the juvenile court, court decision-making, sentencing practices, diversion, institutionalization, community supervision and how it interfaces with the administration of justice.

AJS 225 Criminology**3 cr. hrs. 3 periods (3 lec.)**

Survey of the nature, extent and control of crime and delinquency. Includes comparison of theoretical and practical approaches to causation, prevention, punishment and treatment, and current problems.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

AJS 246 Race and Ethnicity Issues in the Administration of Justice**3 cr. hrs. 3 periods (3 lec.)**

The course examines the impact of cultural diversity on law enforcement to include a discussion of cultural awareness, bias, prejudice, training, recruitment and cross cultural communication. Police challenges in engaging with specific racial/ethnic groups are examined, to include Asian/Pacific Americans, African-Americans, Latino/Hispanic Americans, Arab Americans, Native Americans and others. Homeland security concerns, racial profiling and hate crimes are also addressed.

AJS 250 Criminal Justice Crime Control Policies and Practices**3 cr. hrs. 3 periods (3 lec.)**

Focus on changing the distribution of crime opportunities rather than offender motivation. Topics include application of situational crime prevention strategies, problem-oriented crime control approaches, and crime prevention through defensible space.

AJS 260 Criminal Justice Management**3 cr. hrs. 3 periods (3 lec.)**

A practical examination of the challenges of criminal justice management. Includes unique requirements for these agencies and departments, as differentiated from non-governmental organizations; management theories as applied to criminal justice agencies; effective communication, leadership styles, budgets, decision making, and model management practices. Also includes special problems such as managing difficult or unethical employees; use of force issues; sexual and gender harassment; and work force issues including recruitment, retention, diversity, and training.

Information: Consent of instructor is required before enrolling in course.

AJS 265 Issues in Administration of Justice**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Capstone course for the Administration of Justice Studies program. Students wishing to receive an Associate of Arts degree in Administration of Justice Studies, must successfully complete the projects that encompass the competencies assigned to the six AJS program outcomes.

Prerequisite(s): AJS 101, AJS 109, AJS 115, AJS 124, AJS 204, AJS 225.

Information: Completion of all core AJS courses is required before enrolling in this course. Student may repeat course until passing. Application and acceptance to program is required.

AJS 280 Investigating Transnational Crimes**3 cr. hrs. 3 periods (3 lec.)**

Advanced investigations focusing on transnational crimes of terrorism, drug trafficking, human trafficking, sexual and labor slavery, arms trafficking, racketeering, money laundering and document fraud. Includes evolution and relatedness of these crimes, criminal organizations, criminal methodology, and a comparison of international enforcement and investigations methods.

Prerequisite(s): AJS 204

AJS 290 Administration of Justice Studies Internship**3 cr. hrs. 9- periods (9 lab)**

Supervised internship in a governmental, private or non-profit justice-related organization. Includes placement with law offices, courts, law enforcement agencies, investigative agencies, or corrections agencies (to include probation and reentry) and with organizations responsible for criminal rehabilitation, crime prevention, victim services, or crime policy.

Prerequisite(s): WRT 101, AJS 101, 109, 124

Information: Completion of 12 credit hours of Administration of Justice Studies courses are required before enrolling in this course. May take this course one time during last year of full-time study in the Administration of Justice Studies (AJS) program. Application and acceptance to program is required.

Agriculture

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AGR 185 Careers in Crop Production**1 cr. hrs. 1 periods (1 lec.)**

Exploration of career opportunities in crop production. Includes exposure to a broad array of relevant careers working with field crops, permanent tree crop production, turf science, and a variety of horticultural crops grown throughout the western United States and other regions of the world. Also includes career management; and preparation of a resume, cover letter, and internship proposal.

AGR 200IN Introduction to Soil Science**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Basic principles of soil as a component of terrestrial ecosystems. Includes the composition of soil and its operation within the overall biosphere. Also includes soil as a medium for plant growth in croplands, rangelands, and forest lands. Also includes the role of soils in environmental quality, health, water resources, erosion, recreation, and wildlife.

Prerequisite(s): CHM151IN

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.

American Indian Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AIS 101 Introduction to American Indian Studies

3 cr. hrs. 3 periods (3 lec.)

Examination of the diversity of American Indian tribes. Includes origins and traditions, Native American cultures and geographic subsistence, women's roles and responsibilities, spirituality and world views, and values and value systems. Also includes early education, socialization, and importance of extended family, history of tribal sovereignty and governance, health and curing, and encounters and reactions with early Europeans.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

AIS 122 Tohono O'odham History and Culture

3 cr. hrs. 3 periods (3 lec.)

Survey of Tohono O'odham culture, historical development, and modern issues. Includes development of culture and world view, sources of Tohono O'odham history, role in economic and social development of Northwestern Mexico and Southwestern United States, and contemporary Tohono O'odham issues.

Information: Same as HIS 122.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

AIS 124 History and Culture of the Yaqui People

3 cr. hrs. 3 periods (3 lec.)

Survey of the cultural heritage of the Yaqui people and the history of their struggles to protect Yaqui land and customs. Includes Yaqui origins, pre-Columbian Yaqui society, oral traditions and world view, early Spanish contacts, Catholic influences, economic development; rebellions, resistance and leadership; and policies regarding Native Americans. Also includes the deportation and enslavement of the Yaqui from the 17th to the 20th centuries by the Spanish and American governments and the deportation of the Yaqui by the United States in the 1880's. Also examines acts of genocide and subjugation against the Yaqui in revolutionary Mexico, 20th century relocation and adaptation strategies of the Yaqui in the United States and the Yaqui culture of the 21st century.

Information: Same as HIS 124.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

AIS 148 History of Indians of North America

3 cr. hrs. 3 periods (3 lec.)

History of the cultural development of Native Americans of North America and the interrelations of cultures. Includes Native American origins, early economic and social development, Europeans, eras in Native American history, modern leadership, and research studies.

Information: Same as ANT/HIS 148.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

AIS 205 Introduction to Southwestern Prehistory

3 cr. hrs. 3 periods (3 lec.)

Study of the prehistory of the American Southwest from its earliest inhabitants to European contact. Includes anthropology and its subfields, basics of archaeology, the Southwest, Paleoindians, archaic peoples; Hohokam, Mogollon, Anasazi, and other Southwestern cultures; and late prehistoric and historic cultural change.

Information: Same as ANT/ARC 205.

Gen Ed: Meets AGEC - HUM or SBS and C; Meets CTE - A&H or SBS and C.

AIS 206 Contemporary Native Americans of the Southwest

3 cr. hrs. 3 periods (3 lec.)

Survey of Native American cultures with emphasis on peoples of the Southwestern United States and northern Mexico. Includes overview of Native groups in the Southwestern United States and northern Mexico, environmental zones and modes of production, cultural and linguistic diversity, cultural configurations, Pan- Native American issues, and frameworks for understanding Native American culture and experience.

Information: Same as ANT 206.

Gen Ed: Meets AGEC - HUM or SBS and C; Meets CTE - A&H or SBS and C.

American Sign Language

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ASL 050 Conversational Sign Language I**3 cr. hrs. 3 periods (3 lec.)**

Introduction to conversational sign language skills. Includes basic sign vocabulary, d/Deaf culture, and an overview of communications systems.

ASL 101 American Sign Language I**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to American Sign Language (ASL). Includes: parameters; syntax; sentence types; facial expressions and body language; pronominalization; nouns and verbs; modals; sign space; time line and time modulations; classifiers; pluralizations; and deaf history and culture. Also includes: fingerspelling numbers; lexicalized fingerspelling; conceptual accuracy; sign modulation; conversational regulators; basic compounds and contractions; and existence of regional dialects/sign and language variations. Because language and culture are inextricably linked, this course will also demonstrate how ASL conveys the values, beliefs, customs, and history of American Deaf culture.

Information: Students will be required to perform an additional 10 lab hours outside of the regular classroom schedule. This lab experience is designed to provide a “signing only” environment for students to practice classroom skills with Deaf tutors; expose students to communication in a Deaf environment; and provide students with real life exposure to the Deaf community. This class is conducted primarily without voice.

Gen Ed: Meets AGEC - OTHER and C; Meets CTE - A&H and C.

ASL 102 American Sign Language II**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of ASL 101. Includes: parameters; syntax; sentence types; facial expression and body language; sign space; pronominalization; nouns/verbs; time line; classifiers; pluralizations; deaf culture; and fingerspelling numbers. Also includes conceptual accuracy, modulations, sight line, lexicalized fingerspelling, contractions, direct address, conjunctions, model stories, history of sign, language variations, sign continuum, and how people hear. Because language and culture are inextricably linked, this course will also demonstrate how ASL conveys the values, beliefs, customs, and history of American Deaf culture.

Prerequisite(s): ASL 101 with a grade of C or better.

Information: Students will be required to perform an additional 10 lab hours outside of the regular classroom schedule. This lab experience is designed to provide a “signing only” environment for students to practice classroom skills with Deaf tutors; expose students to communication in a Deaf environment; and provide students with real life exposure to the Deaf community. This class is conducted primarily without voice.

Gen Ed: Meets AGEC - OTHER and C; Meets CTE - A&H and C.

ASL 105 Beginning Fingerspelling and Numbers**3 cr. hrs. 3 periods (3 lec.)**

Enhancement of receptive and expressive ASL skills with a focus on fingerspelling and numbers. Also includes practice in specific skills that underlie the fingerspelled word recognition process. Also includes contextual practice for correctly recognizing and producing fingerspelled and numbered words.

Prerequisite(s): ASL 102.

Information: Additional lab hours are required outside of regularly scheduled class.

ASL 200 Introduction to the Deaf Community**3 cr. hrs. 3 periods (3 lec.)**

Macroscopic view of culture and microscopic view of the Deaf life experience through culture and language. Includes cross-cultural interactions between deaf and hearing people. Also includes the history of the Deaf community, Deaf education, Deaf technologies, Deaf employment, historical trends and Deaf services.

Prerequisite(s): ASL 201 with a grade of B or better.

ASL 201 American Sign Language III**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of ASL 102. Includes sentence order, modulation/inflection, prosody, sign space usage, conceptual accuracy, sign vocabulary, and deaf culture and history. Because language and culture are inextricably linked, this course will also demonstrate how ASL conveys the values, beliefs, customs, and history of American Deaf culture.

Prerequisite(s): ASL 102 with a grade of C or better.

Information: Students will be required to perform an additional ten lab hours outside of regular classroom schedule. The lab experience is designed to provide a “signing only” environment for students to practice classroom skills with Deaf tutors; expose students to communication in a Deaf environment; provide students with real life exposure to the Deaf community. This class is conducted primarily without voice.

Gen Ed: Meets AGEC - OTHER and C; Meets CTE - A&H and C.

ASL 202 American Sign Language IV**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of ASL 201. Includes: use of sign space; conceptual accuracy; directionality; mimetic description; dialects; numerical applications; American Sign Language (ASL) expansions; English words with no direct ASL translation; English passive voice to ASL active voice; rendering ASL and English passages; current cultural issues; and the field of interpreting. Because language and culture are inextricably linked, this course will also demonstrate how ASL conveys the values, beliefs, customs, and history of American Deaf culture.

Prerequisite(s): ASL 201 with a grade of C or better.

Information: Students will be required to perform an additional ten lab hours outside of regular classroom schedule. The lab experience is designed to provide a "signing only" environment for students to practice classroom skills with Deaf tutors; expose students to communication in a Deaf environment; provide students with real life exposure to the Deaf community. This class is conducted primarily without voice.

Gen Ed: Meets AGEC - OTHER and C; Meets CTE - A&H and C.

ASL 203 Comparative Analysis of ASL and English**3 cr. hrs. 3 periods (3 lec.)**

Enhanced study of the fundamental principles and cognitive processing of American Sign Language. Includes a further study of the Deaf community and Deaf culture.

Prerequisite(s): ASL 201 with a grade of B or better, and WRT 102.

Information: This course is recommended for students who have finished ASL 202 or ASL departmental approval and desire further study and review. Students may be expected to attend outside events at their own expense.

ASL 204 Discourse Features in ASL**3 cr. hrs. 3 periods (3 lec.)**

This course is an overview of ASL discourse. Includes discourse structure, language, variation, genre, register, prosody, cohesion, take-turning, back-channeling and gendered communication. Also includes transcription conventions for noting language samples.

Prerequisite(s): ASL 202 with a grade of B or better

ASL 205 Advanced Fingerspelling and Numbers**3 cr. hrs. 3 periods (3 lec.)**

Continued enhancement of both receptive and expressive ASL skills with a focus on fingerspelling and numbers. Includes improved fingerspelled word recognition and expression by providing theoretical information, practice in specific skills that underlie the fingerspelled word recognition process. Also includes practice in correctly recognizing and producing fingerspelled words in context.

Prerequisite(s): ASL 202 with a grade of B or higher.

ASL 206 American Sign Language V**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Development of ASL receptive and expressive fluency. Also includes understanding the linguistic features of ASL and in enhancing understanding of deaf community and culture.

Prerequisite(s): ASL 202 with a grade of C or higher

ASL 215 ASL Literature: Narratives**3 cr. hrs. 3 periods (3 lec.)**

This course is a continuation of the major grammatical features of American Sign Language (ASL) to develop communicative and interactive competencies in the culture and language of the Deaf. Includes a focus on ASL literature by introducing students to ASL storytelling techniques, film analysis, story analysis, and its techniques. Also includes ASL narratives, classifiers and perspectives.

Prerequisite(s): ASL 200 and 202 with a grade of B or better.

Information: This course is taught in ASL and utilizes receptive skills through ASL literature and media. Students are expected to experiment with ASL storytelling and the use of classifier techniques. Additional hours may be required outside of the regularly scheduled class.

ASL 296 Independent Study in Sign Language**1-3 cr. hrs. 3-9 periods (3-9 lab)**

Exploration of special interest areas in sign language and deaf cultures. Includes extensive practice of sign language skills and in depth study of deaf cultures involving literature, grammar, and special projects under the supervision of the instructor.

Prerequisite(s): ASL 102.

Information: Student must have consent of instructor.

Anthropology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ANT 101 Human Origins and Prehistory

3 cr. hrs. 3 periods (3 lec.)

Survey of biological anthropology and archaeology. Includes Anthropology and its subfields, the development of evolutionary theory, modern human variation, primates, paleoanthropology and archaeology, and the emergence of the human species from its origins.

Information: Same as ARC 101.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ANT 102 Introduction to Cultural Anthropology and Linguistics

3 cr. hrs. 3 periods (3 lec.)

Survey of human societal structure. Includes sub-fields of anthropology, sub-disciplines and topics, historical origins, influences, key figures and methods. Also includes an introduction to the comparative study of cultures.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

ANT 110 Buried Cities and Lost Tribes

3 cr. hrs. 3 periods (3 lec.)

Exploration of some of the most important events in the human past around the world. Includes an introduction to the methods of archaeology and how archaeologists learn about the past, origins and spread of modern humans, origins of domestication, and the development of social complexity in different times and places, and current issues in archaeology.

Information: Same as ARC 110.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ANT 112 Exploring Non-Western Cultures

3 cr. hrs. 3 periods (3 lec.)

Anthropological survey of non-Western cultures. Includes major terms and concepts used in sociocultural anthropology, research methods, and relevant theories of the field. Also includes major cultural characteristics of pre-colonial, non-Western, subsistence cultures; cross-cultural comparisons and contrasts with the post-colonial era; and considering a global context.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Students will have writing assignments that require college level skills, and writing quality will be graded.

Gen Ed: Meets AGEC - HUM or SBS and I, C, G; Meets CTE - A&H or SBS and C, G.

ANT 127 History and Culture of the Mexican-American in the Southwest

3 cr. hrs. 3 periods (3 lec.)

Historical survey of Mexicano(a)/Chicano(a) people from their indigenous origins in Meso-America and the Gran Chichimeca to the present in the United States. Includes historical writings, movements north under Spain and Mexico, repression and resistance. Also covers the political, economic, religious and social movements of the 19th, 20th and early 21st centuries.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Same as HIS 127 and MAS 127.

Gen Ed: Meets AGEC - SBS and I, C, G; Meets CTE - SBS and C, G.

ANT 148 History of Indians of North America

3 cr. hrs. 3 periods (3 lec.)

History of the cultural development of Native Americans of North America and the interrelations of cultures. Includes Native American origins, early economic and social development, Europeans, eras in Native American history, modern leadership, and research studies.

Information: Same as AIS/HIS 148.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

ANT 180 Artifact Identification: Tucson Basin

1 cr. hrs. 2 periods (.5 lec., 1.5 lab)

Introduction to the recognition, identification, and classification of the various types of artifacts recovered from local archaeological sites. Includes an overview of prehistoric ceramics in the Tucson Basin, flaked stone technology, ground stone tool identification, animal bone, marine shell artifacts and historical artifacts.

Information: Same as ARC 180.

ANT 181 Global Positioning Systems Basics**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the use of Global Positioning Systems (GPS) receivers in a field setting for non-technical applications. Includes GPS vocabulary, operation, field data collection and data transfer. Also includes using equipment, resources and facilities of the Archaeology Centre.

Information: Same as ARC/GIS 181.

ANT 202 Sexuality, Gender and Culture**3 cr. hrs. 3 periods (3 lec.)**

Anthropological examination of gender identity, roles, relations, and variation. Includes theories and methods of the anthropology of sex and gender, historical origins and development of the sub-discipline, and sex, gender and sexuality in cross-cultural, ethnographic perspective. Also includes selected case studies and cross-cultural frameworks for analysis.

Information: Same as GWS 202.

Gen Ed: Meets AGECE - SBS and C; Meets CTE - SBS and C.

ANT 204IN Human Evolution: Ape Men, Cave Women and Missing Links**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Study of human evolution and variation. Includes human genetics and variation, the human skeleton, primate anatomy and behavior, the fossil evidence for human evolution, biocultural evolution, and application of the concepts of biological anthropology in a laboratory setting.

Information: Same as ARC 204IN.

ANT 205 Introduction to Southwestern Prehistory**3 cr. hrs. 3 periods (3 lec.)**

Study of the prehistory of the American Southwest from its earliest inhabitants to European contact. Includes anthropology and its subfields, basics of archaeology, the Southwest, Paleoindians, archaic peoples; Hohokam, Mogollon, Anasazi, and other Southwestern cultures; and late prehistoric and historic cultural change.

Information: Same as AIS/ARC 205.

Gen Ed: Meets AGECE - HUM or SBS and C; Meets CTE - A&H or SBS and C.

ANT 206 Contemporary Native Americans of the Southwest**3 cr. hrs. 3 periods (3 lec.)**

Survey of Native American cultures with emphasis on peoples of the Southwestern United States and Northern Mexico. Includes overview of Native groups in the Southwestern United States and northern Mexico, environmental zones and modes of production, cultural and linguistic diversity, cultural configurations, Pan- Native American issues, and frameworks for understanding Native American culture and experience.

Information: Same as AIS 206.

Gen Ed: Meets AGECE - HUM or SBS and C; Meets CTE - A&H or SBS and C.

ANT 210 Cultural Anthropology**3 cr. hrs. 3 periods (3 lec.)**

Exploration of the study of culture. Includes discussion of cultural anthropology as a subfield of anthropology, theoretical perspectives and analysis, survey of research methods for collection and analysis of data, an examination of cultural diversity through ethnographic studies, and ethical issues in anthropological research and ethnographic studies.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGECE - SBS and I, G; Meets CTE - SBS and G.

ANT 215 The Nature of Language**3 cr. hrs. 3 periods (3 lec.)**

Introduction to anthropological linguistics. Includes the history of linguistics, descriptive linguistics, sociolinguistics, and language and culture. Also includes key topics in linguistics, including language acquisition, cultural diversity, language and education, and ethical issues.

ANT 225 Principles of Archaeology**3 cr. hrs. 4 periods (2.5 lec., 1.5 lab)**

Survey of the concepts and methods which archaeologists use to reconstruct human prehistory. Includes a history of archaeology; overview of archaeological theory, discussion of methods of archaeological survey, remote sensing, and excavation; dating methods; archaeological analysis and classification; interpretation of archaeological data; and the role of archaeology in the protection of archaeological resources.

Information: Same as ARC 225.

ANT 250 Archaeology Laboratory**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Laboratory experience in the curating, processing and analysis of artifacts recovered from archaeological sites. Includes human osteology, zooarchaeology, lithic analysis, prehistoric ceramics, shells, historic artifacts, and usage of the Archaeology Centre.

Prerequisite(s): ANT/ARC 180 or 275 or 276.

Information: Prerequisite(s) may be waived with consent of instructor. Same as ARC 250.

ANT 253 Death and Dying Across Cultures**3 cr. hrs. 3 periods (3 lec.)**

Introduction to death and dying in various cultures. Includes developmental aspects of death and grieving, world view, cultural views of the dying process, ethical issues in death across cultures, socio-political implications in the treatment of dead bodies, disposition of the corpse, and grieving and bereavement.

ANT 265 Mapping Concepts**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the practical use of maps. Includes map basics and attributes, scales and measurements, direction, geographic coordinate systems, relief and contours, and aerial photography.

Information: Same as ARC/GEO/GIS 265.

ANT 267 Introduction to Geographic Information Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to geographic information systems (GIS) using the industry standard ESR software. Includes data types, data management, coordinate systems and map production. Also includes understanding attribute data, basic editing and queries using SQL.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Prerequisite may be waived with consent of instructor. Basic computer skills are required before enrolling in this course. Same as ARC/GEO/GIS 267.

ANT 275 Archaeological Excavation I**3 cr. hrs. 9 periods (9 lab)**

Introduction to the techniques and principles of archaeological excavation. Includes field mapping, excavation, recording, and laboratory processing methods, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and an overview of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Information: Same as ARC 275.

ANT 276 Archaeological Surveying I**3 cr. hrs. 9 periods (9 lab)**

Introduction to the techniques and methods of archaeological surveying. Includes the application of field techniques for planning an archaeological survey; instrument use; identifying and recording artifacts, archaeological sites, and associated natural resources; survey methods; and site recording and mapping, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and an overview of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Recommendation: Completion of or concurrent enrollment in ANT/ARC 180.

Information: Same as ARC 276.

ANT 277 Archaeological Excavation II**3 cr. hrs. 9 periods (9 lab)**

Advanced techniques and principles of archaeological excavation. Includes advanced field mapping, excavation, recording, field crew supervision, and data synthesis, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and issues of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Prerequisite(s): ANT/ARC 275.

Recommendation: Completion of (or concurrent enrollment in): AIS/ANT/ARC 205 and ANT/ARC/GIS 265. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as ARC 277.

ANT 278 Archaeological Surveying II**3 cr. hrs. 9 periods (9 lab)**

Advanced techniques and principles of archaeological surveying. Includes advanced methods for survey planning, archival research, field survey, site recording, mapping, and data synthesis, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and issues of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Prerequisite(s): ANT/ARC 276.

Recommendation: Completion of (or concurrent enrollment in): AIS/ANT/ARC 205 and ANT/ARC/GIS 265. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as ARC 278.

ANT 281 Global Positioning Systems**1 cr. hrs. 3 periods (3 lab)**

Introduction to the technical use of Global Positioning Systems (GPS) receivers in a field setting. Includes review of GPS vocabulary and concepts, comprehensive initialization of handheld GPS receivers, data collection with handheld GPS, the use of mapping software with data from handheld GPS, concepts of differential GPS, operation of and field data collection with precision GPS, and use of software packages for differential correction and map production. Also includes using equipment, resources and facilities of the Archaeology Centre.

Prerequisite(s): ANT/ARC/GIS 181

Information: Prerequisite may be waived with equivalent experience or consent of instructor. Same as ARC/GIS 281.

ANT 284 Computer Cartography and CAD**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Cartographic techniques and hardware for computer generation of maps. Includes an introduction to: methods and techniques, and application projects.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Same as ARC/GIS 284.

ANT 286 Electronic and Digital Field Mapping**3 cr. hrs. 6 periods (1.5 lec., 4.5 lab)**

Overview of the creation of electronic and digital maps in a field setting. Includes an introduction to: instrument operation, field data, producing maps, and computer applications.

Prerequisite(s): ANT/ARC 265 and ANT/ARC/GIS 281.

Recommendation: Consult instructor for alternative prerequisite(s).

Information: Same as ARC/GIS 286.

ANT 295 Field Projects**.5-4 cr. hrs. 1.5-12 periods (1.5-12 lab)**

Participation in a field project in one of the subfields of anthropology.

Information: Same as ARC 295. Consent of instructor is required before enrolling in this course.

ANT 296 Independent Studies in ANT/ARC**.5-4 cr. hrs. .5-4 periods (.5-4 lec.)**

Independent study in anthropology or archaeology. Includes topic identification, research plan, data gathering, and presentation of findings.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of 12 credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Same as ARC 296.

Arabic

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ARB 101 Elementary Modern Standard Arabic I**4 cr. hrs. 4 periods (4 lec.)**

Introduction to modern standard Arabic language. Includes modern standard Arabic alphabet, grammatical structures, interpersonal transactions, and cultural contexts. Also includes speaking, listening, reading, and writing of Arabic.

Gen Ed: Meets AGECE - OTHER; Meets CTE - A&H.

ARB 102 Elementary Modern Standard Arabic II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of ARB 101. Includes additional uses of Modern Standard Arabic alphabet, grammatical structures interpersonal transactions and protocols, and cultural contexts. Also includes additional speaking, listening, reading, and writing of Arabic.

Prerequisite(s): ARB 101.

Gen Ed: Meets AGEC - OTHER; Meets CTE - A&H.

Archaeology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ARC 060 Artifacts and Sites of Tucson**.5 cr. hrs. .5 periods (.5 lec.)**

Overview of the artifacts and archaeological sites of the Tucson Basin. Includes using museum collections, equipment, resources and facilities of the Archaeology Centre.

Information: Field trip is part of the course.

ARC 062 Stone Tool Making**.5 cr. hrs. .5 periods (.5 lec.)**

Introduction to the production of chipped stone tools. Includes using museum collections, equipment, resources and facilities of the Archaeology Centre.

ARC 093 Archaeology Workshop**.5-3 cr. hrs. .5-3 periods (.5-3 lec.)**

Workshop with an emphasis on field and lab techniques. Includes using museum collections, equipment, resources and facilities of the Archaeology Centre or equivalent.

ARC 101 Human Origins and Prehistory**3 cr. hrs. 3 periods (3 lec.)**

Survey of biological anthropology and archaeology. Includes Anthropology and its subfields, the development of evolutionary theory, modern human variation, primates, paleoanthropology and archaeology, and the emergence of the human species from its origins.

Information: Same as ANT 101.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ARC 110 Buried Cities and Lost Tribes**3 cr. hrs. 3 periods (3 lec.)**

Exploration of some of the most important events in the human past around the world. Includes an introduction to the methods of archaeology and how archaeologists learn about the past, origins and spread of modern humans, origins of domestication, and the development of social complexity in different times and places, and current issues in archaeology.

Information: Same as ANT 110.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ARC 180 Artifact Identif: Tucson Basin**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Artifact Identification: Tucson Basin Introduction to the recognition, identification, and classification of the various types of artifacts recovered from local archaeological sites. Includes an overview of prehistoric ceramics in the Tucson Basin, flaked stone technology, ground stone tool identification, animal bone, marine shell artifacts and historical artifacts.

Information: Same as ANT 180.

ARC 181 Global Positioning Systems Basics**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the use of Global Positioning Systems (GPS) receivers in a field setting for non-technical applications. Includes GPS vocabulary, operation, field data collection and data transfer. Also includes using equipment, resources and facilities of the Archaeology Centre.

Information: Same as ANT/GIS 181.

ARC 204IN Human Evolution: Ape Men, Cave Women and Missing Links**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Study of human evolution and variation. Includes human genetics and variation, the human skeleton, primate anatomy and behavior, the fossil evidence for human evolution, biocultural evolution, and application of the concepts of biological anthropology in a laboratory setting.

Information: Same as ANT 204IN.

ARC 205 Introduction to Southwestern Prehistory**3 cr. hrs. 3 periods (3 lec.)**

Study of the prehistory of the American Southwest from its earliest inhabitants to European contact. Includes anthropology and its subfields, basics of archaeology, the Southwest, Paleoindians, archaic peoples; Hohokam, Mogollon, Anasazi, and other Southwestern cultures; and late prehistoric and historic cultural change.

Information: Same as AIS/ANT 205.

Gen Ed: Meets AGEC - HUM or SBS and C; Meets CTE - A&H or SBS and C.

ARC 225 Principles of Archaeology**3 cr. hrs. 4 periods (2.5 lec., 1.5 lab)**

Survey of the concepts and methods which archaeologists use to reconstruct human prehistory. Includes a history of archaeology; overview of archaeological theory, discussion of methods of archaeological survey, remote sensing, and excavation; dating methods; archaeological analysis and classification; interpretation of archaeological data; and the role of archaeology in the protection of archaeological resources.

Information: Same as ANT 225.

ARC 250 Archaeology Laboratory**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Laboratory experience in the curating, processing and analysis of artifacts recovered from archaeological sites. Includes human osteology, zooarchaeology, lithic analysis, prehistoric ceramics, shells, historic artifacts, and usage of the Archaeology Centre.

Prerequisite(s): ANT/ARC 180 or 275 or 276.

Information: Prerequisite(s) may be waived with consent of instructor. Same as ANT 250.

ARC 265 Mapping Concepts**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the practical use of maps. Includes map basics and attributes, scales and measurements, direction, geographic coordinate systems, relief and contours, and aerial photography.

Information: Same as ANT/GEO/GIS 265.

ARC 267 Introduction to Geographic Information Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to geographic information systems (GIS) using the industry standard ESR software. Includes data types, data management, coordinate systems and map production. Also includes understanding attribute data, basic editing and queries using SQL.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Prerequisite may be waived with consent of instructor. Basic computer skills are required before enrolling in this course. Same as ANT/GEO/GIS 267.

ARC 275 Archaeological Excavation I**3 cr. hrs. 9 periods (9 lab)**

Introduction to the techniques and principles of archaeological excavation. Includes field mapping, excavation, recording, and laboratory processing methods, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and an overview of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Information: Same as ANT 275.

ARC 276 Archaeological Surveying I**3 cr. hrs. 9 periods (9 lab)**

Introduction to the techniques and methods of archaeological surveying. Includes the application of field techniques for planning an archaeological survey; instrument use; identifying and recording artifacts, archaeological sites, and associated natural resources; survey methods; and site recording and mapping, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and an overview of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Recommendation: Completion of or concurrent enrollment in ANT/ARC 180.

Information: Same as ANT 276.

ARC 277 Archaeological Excavation II**3 cr. hrs. 9 periods (9 lab)**

Advanced techniques and principles of archaeological excavation. Includes advanced field mapping, excavation, recording, field crew supervision, and data synthesis, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and issues of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Prerequisite(s): ANT/ARC 275.

Recommendation: Completion of (or concurrent enrollment in): AIS/ANT/ARC 205 and ANT/ARC/GIS 265. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as ANT 277.

ARC 278 Archaeological Surveying II**3 cr. hrs. 9 periods (9 lab)**

Advanced techniques and principles of archaeological surveying. Includes advanced methods for survey planning, archival research, field survey, site recording, mapping, and data synthesis, with field experience in Southern Arizona. Also includes culture history, archaeological ethics, and issues of cultural resource management. Uses museum collections, equipment, resources and facilities of the Archaeology Centre.

Prerequisite(s): ANT/ARC 276.

Recommendation: Completion of (or concurrent enrollment in): AIS/ANT/ARC 205 and ANT/ARC/GIS 265. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as ANT 278. Consult instructor for alternative prerequisite(s).

ARC 281 Global Positioning Systems**1 cr. hrs. 3 periods (3 lab)**

Introduction to the technical use of Global Positioning Systems (GPS) receivers in a field setting. Includes review of GPS vocabulary and concepts, comprehensive initialization of handheld GPS receivers, data collection with handheld GPS, the use of mapping software with data from handheld GPS, concepts of differential GPS, operation of and field data collection with precision GPS, and use of software packages for differential correction and map production. Also includes using equipment, resources and facilities of the Archaeology Center.

Prerequisite(s): ANT/ARC/GIS 181

Information: Prerequisite may be waived with equivalent experience or consent of instructor. Same as ANT/GIS 281.

ARC 284 Computer Cartography and CAD**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Cartographic techniques and hardware for computer generation of maps. Includes an introduction to: methods and techniques, and application projects.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Same as ANT/GIS 284.

ARC 286 Electronic and Digital Field Mapping**3 cr. hrs. 6 periods (1.5 lec., 4.5 lab)**

Overview of the creation of electronic and digital maps in a field setting. Includes an introduction to: instrument operation, field data, producing maps, and computer applications.

Prerequisite(s): ANT/ARC 265 and ANT/ARC/GIS 281.

Recommendation: Consult instructor for alternative prerequisite(s).

Information: Same as ANT/GIS 286.

ARC 295 Field Projects**.5-4 cr. hrs. 1.5-12 periods (1.5-12 lab)**

Participation in a field project in one of the subfields of anthropology.

Information: Same as ANT 295. **Information:** Consent of instructor is required before enrolling in this course.

ARC 296 Independent Studies in ANT/ARC**.5-4 cr. hrs. .5-4 periods (.5-4 lec.)**

Independent study in anthropology or archaeology. Includes topic identification, research plan, data gathering, and presentation of findings.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of 12 credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Same as ANT 296.

Art

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ART 100 Basic Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the elements and principles of visual design. Includes identifying and interpreting creative problems; emphasizing art and design skills; writing reviews of gallery visits/museum visits/artist lectures; articulating and demonstrating progressive skills in their own work; participating in individual and group critiques; and relating their work on a conceptual, interpersonal and global level.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

ART 105 Exploring Art and Visual Culture**3 cr. hrs. 3 periods (3 lec.)**

Exploration of historical and contemporary art and the visual image within the context of global culture. Includes selective perception, formal analysis, materials and techniques, art and visual culture in a historical and contemporary framework; and museum, galleries, and public spaces.

Gen Ed: Meets AGEC - FA and G; Meets CTE - A&H or SBS and G.

ART 106 Survey of Painting Materials and Techniques**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Technical, theoretical, and historical investigation of painting methods in art, from ancient times to contemporary times. Includes materials used in painting; watercolor, fresco, and encaustic techniques; the glair technique, egg tempera technique, the indirect oil technique, the direct oil technique, the acrylic technique, and socio-economic conditions and contemporary issues.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

ART 109 Watercolor Painting**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introductory course in watercolor painting that explores basic materials, techniques, and development of students' personal style. Includes compositional elements, materials and tools, mixing colors and properties of watercolor pigments, application methods, developing subject matter and genres, and critique and artistic development.

ART 110 Drawing I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to drawing. Includes drawing and design problems, varied use of materials and techniques, perceptual skills, critique processes with critical thinking for personal growth, analysis of professional art events or galleries, and portfolio creation.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

ART 115 Color and Composition**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to recognizing color principles and relationships and analyzing and duplicating colors. Includes values scale, color wheel, intensity, color relationships, transparency, dimension, luminosity, and creative projects.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

ART 120 3D Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to three-dimensional design. Includes concepts and approaches to three-dimensional design, critical analysis, 3D design elements and principles, exploration of a range of media and techniques, and basic sculptural design lab procedures.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

ART 121 Figure Sculpture**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Beginning modeling techniques using clay and other media working partly from anatomical references and partly from the model. Includes visual literacy and critical analysis, range of media, approaches to figurative sculpture, technical understanding in working with human anatomy, content, and safety.

Recommendation: Completion of ART 120 and 213 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: There may be additional supply costs in addition to course fees.

ART 123 Sculpture: Metal Casting**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to metal casting of sculpture with emphasis on the lost wax method, historical and contemporary issues in cast sculpture, and individual artistic exploration. Includes content development, major techniques, health and safety issues, and visual literacy and critical analysis.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 128 Digital Photography I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to digital photography emphasizing the technical and aesthetic issues and how these qualities form image content. Includes Adobe Photoshop basics, history of still photography, applications of digital cameras, aspects of the digital medium, camera and computer equipment requirements, digital still camera, memory and file formats, digital still camera lenses, and proper exposure. Also includes light, color, and temperature; depth of field, shutter speed effects, proper use of digital photography, lighting for digital stills, elements of composition, photographic rendering and reality, outputting and publishing, portfolio preparation, and career options in digital photography.

Recommendation: Adobe Photoshop experience is highly recommended before enrolling in this course.

Information: Same as DAR 128. It is recommended students have access to a digital camera with manual exposure control and a computer with image processing software. Professional photographic equipment, including cameras, are available for check out on a rotating basis. Professional quality computers, software, printers, lighting equipment, and studio will be provided for specific assignments. There will be additional supply costs beyond course fees.

ART 130 Art and Culture: Prehistoric through Gothic**3 cr. hrs. 3 periods (3 lec.)**

A survey of the development of art and architecture in Western Civilization from prehistoric through Gothic art with the inclusion of a global perspective. Includes identification and interpretation of cultural and stylistic characteristics, contextual functions and purposes of works of art, influences of cultural values on the production of art, art historical terminology, exemplars of non-Western culture, and critical methodologies.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, G; Meets CTE - A&H or SBS and G.

ART 131 Art and Culture: Late Gothic through Modern Periods**3 cr. hrs. 3 periods (3 lec.)**

A survey of the development of art and architecture in western civilization from late Gothic through Modern periods. Includes recognition and interpretation of period and style characteristics, function and purposes of art, influences on art production, issues in production and content, historical terminology, and critical methodologies.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, G; Meets CTE - A&H or SBS and G.

ART 136 Body and Art**3 cr. hrs. 3 periods (3 lec.)**

A visual cultural exploration of how humans utilize the body as a vehicle for communicating and displaying personal and group identities. Includes anthropological and art historical study of types of permanent and temporary body decorations, masks, and performance; and the ethical issues surrounding the study and use of imagery within and between cultures. Also includes the conceptual examination of global examples and an overview of practical projects to demonstrate the continued vitality of each mode of expression.

ART 140 Photography I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to black and white photography as an art form with an emphasis on fundamental technique of the camera and wet darkroom. Includes manual camera competencies, manual film development, basic darkroom procedures, portfolio building, visual literacy and critical analysis, and the role of photography.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 141 Photography II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Principles and processes of intermediate black and white photography. Includes use of various types of camera formats, development of film, creating a series, individual darkroom space, advanced darkroom techniques, portfolio production, exhibition presentation, copy slide production, and verbalization of visual perceptions.

Prerequisite(s): ART 140.

Information: Student is required to submit a portfolio for review.

ART 146 Lighting for Photography I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to creative professional lighting concepts and techniques for commercial and fine art photography. Includes lighting and studio equipment, light qualities, lighting for form, lighting for surface qualities, still- life photography, portrait photography, image composition, critical analysis, and portfolio.

Prerequisite(s): ART/DAR 128.

Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, computers and software, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees. Same as DAR 146.

ART 147 Alternative Processes in Photography**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Designed for the advanced image maker interested in expanding knowledge of alternative photographic processes. Includes enlarging negatives for contact printing, nineteenth century processes, twentieth century processes, darkroom materials, and artwork presentation.

Prerequisite(s): ART 128 or 140.

ART 160 Ceramics I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to ceramics. Includes beginning handbuilding techniques and methods of fabrication, wheel throwing and trimming, projects involving formal elements, beginning ceramic techniques, reduction firing, raku firing, ceramic artist research, discussion, and exploration topics.

Recommendation: Completion of ART 100 before enrolling in this course or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 170 Metalwork I: Jewelry**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Exploration of the basic techniques and design approaches used in the fabrication of jewelry and other metalwork. Includes information and background on historical and contemporary metalwork and jewelry, and techniques and processes of jewelry and metalwork.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 175 Ferrous Metalwork: Blacksmithing, Tool Making/Knife Making**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the materials, design, techniques, safety habits, and methods used in ferrous metalwork. Includes basic tools and techniques of blacksmithing, metals lab procedures, tool design, and metallurgical theory and metalworking practice.

Information: Completion of ART 100 is recommended before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 180 Weaving I: Four-Harness Loom**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Weaving on a four-harness loom. Includes preparation of the loom; projects involving the use of tabby, twill, tubular, textural, and tapestry weaves in the creation of fiber art; and major creative projects using techniques learned in class.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 181 Mixed Media Fibers**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to fiber as an art medium. Includes fiber processes such as coiling, felting, stitching, shibori dyeing, and surface design which are used to create projects and artistic compositions.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 210 Drawing II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 110. Includes strengthening of drawing and critical thinking skills. Also includes intermediate drawing and design problems; intermediate use of materials and techniques; perceptual skill and personal development; critique process; engagement and analysis of professional art events or galleries; and portfolio creation.

Prerequisite(s): ART 110.

Information: Prerequisite(s) may be waived with consent of instructor.

ART 212 Printmaking I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to basic aesthetics and techniques of printmaking. Includes intaglio techniques, relief printing, monotype techniques, and final presentation.

ART 213 Life Drawing I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Drawing of human figures using the two-dimension concept as a graphic vehicle of expression. Includes gesture and contour drawing, varied time length poses, drawing problems, variety of materials, and individual and group critiques of work.

Recommendation: Completion of ART 110 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 214 Printmaking II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 212. Includes advanced problems in aesthetics and techniques of intaglio projects and techniques, relief printing, monotype techniques, and multi-process and alternative approaches to printmaking.

Prerequisite(s): ART 212.

ART 215 Painting I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the fundamentals of oil painting. Includes basic painting techniques and processes, manipulation of compositional elements and formal and contemporary pictorial organization in various genres, surface preparation, personal direction and artistic expression, and health and safety in the painting studio.

Recommendation: Completion of ART 115 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 216 Screenprinting I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to screenprinting using water base and inks. Includes screen construction, direct stencil techniques, photographic techniques, one-color printing, multicolor printing and registration, overview of the types of printing papers, and final presentation.

ART 217 Painting II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 215. Includes intermediate development and reinforcement of basic oil painting techniques and processes, development of compositional elements and formal pictorial organization, manipulation of pictorial elements, artistic expression, and health and safety in the painting studio.

Prerequisite(s): ART 215.

Recommendation: Completion of ART 115 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite(s) may be waived with consent of instructor.

ART 218 Screenprinting II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 216. Includes equipment orientation, advanced stencil-making techniques, printing, and types of printing papers and surfaces.

Prerequisite(s): ART 216.

Information: Students may select areas of interest for concentration and refinement of skills.

ART 219 Printmaking III**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 214. Includes experimentation with intaglio, multi-color possibilities with non-traditional compositions, relief and intaglio multi-processes, monoprint with multiple plates, and critical analysis.

Prerequisite(s): ART 214.

ART 220 Sculpture**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Exploration of methods, materials, and content used in sculpture. Includes studio project concept, media and technique, sculpture lab health and safety procedures, and visual literacy and critical analysis.

Prerequisite(s): ART 120.

ART 223 Life Drawing II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of Life Drawing I. Advanced drawing of human figures using the two-dimension concept as a graphic vehicle of expression. Includes proportional sight strategies, varied time-length poses, drawing problems and materials, figure as expression, and individual and group critiques of work.

Prerequisite(s): ART 213.

Recommendation: Completion of ART 210 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 227 Painting III**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 217. Includes intermediate and advanced painting techniques and processes, exploration of compositional elements, color and value modeling, creative employment of perspective, manipulation of pictorial elements, artistic development, artist statement, and health and safety in the studio.

Prerequisite(s): ART 217.

Information: Prerequisite may be waived with consent of instructor.

ART 232 Digital Photography II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of ART/DAR 128. Includes intermediate digital cameras with manual functions, intermediate digital darkroom and digital output, quality of light, intermediate image composition, multiple images, intermediate portfolio development, and critical analysis. Also includes the intermediate use of state-of-the-art professional quality computers and image processing software, professional digital cameras, printers, and a lighting studio with professional lighting equipment.

Prerequisite(s): ART/DAR 128.

Recommendation: Completion of DAR 221 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as DAR 232. The prerequisite may be waived with consent of the instructor. It is recommended students have access to a digital camera with manual exposure control and a computer with image processing software. Professional photographic equipment, including cameras, are available for check out on a rotating basis. Professional quality computers, software, printers, lighting equipment, and studio will be provided for specific assignments. There will be additional supply costs beyond course fees.

ART 246 Lighting for Photography II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of ART/DAR 146. Includes lighting and equipment for studio and location, advanced lighting qualities and techniques, photographing with mixed light sources, lighting for mood and environment, set design and construction, photographing individuals and groups of people, photographing on location, photographing for montage images, advanced image composition, critical analysis, business practices, and portfolios.

Prerequisite(s): ART/DAR 146.

Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, computers and software, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees. Same as DAR 246.

ART 248 Individual Projects in Photography**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Individual projects in photography at the advanced level. Includes defining a body of work, applying visual presentation formats, editing a print, and equipment and technical photographic skills.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 249 Artists' Books**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the basics of the various styles of bookmaking. Includes historical and contemporary practices, bookbinding techniques, book styles, materials, text and image, unique and multiple edition book runs, and critique of artists' books

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 250 Gallery and Museum Practices**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to practices and procedures of galleries and museums. Includes preparation of resume and artist statement, create press release and exhibition announcement, exhibition preparation, photographing artwork, frame artwork for exhibition, gallery and museum administration, present a body of work, and market artwork.

Prerequisite(s): ART 100.

Recommendation: Consult instructor for alternative prerequisites.

ART 260 Ceramics II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 160. Includes intermediate handbuilding techniques and methods of fabrication, wheel throwing and trimming, projects involving formal elements, intermediate ceramic techniques, reduction firing, raku firing, plaster press mold, ceramic artist research, and discussion and exploration topics.

Prerequisite(s): ART 160.

ART 261 Ceramics III**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 260. Includes intermediate and advanced handbuilding techniques and methods of fabrication, wheel throwing and trimming, projects involving formal elements, intermediate and advanced ceramic techniques, reduction firing, raku firing, plaster casting mold, ceramic artist research, and discussion and exploration topics.

Prerequisite(s): ART 260.

ART 262 Ceramics IV**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 261. Includes advanced handbuilding techniques and methods of fabrication, wheel throwing and trimming, projects involving formal elements, advanced ceramic techniques, reduction firing, raku firing, four test glazemaking, ceramic artist research, and discussion and exploration topics.

Prerequisite(s): ART 261.

ART 265 Furnace Glassblowing I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the elements, tools, and basic principles of furnace glassblowing. Includes the glassblowing studio and cold working shop orientation, paperweights and solid glass forms, the blowpipe, cold working glass, a final project, and visual literacy and critical analysis.

Recommendation: Completion of ART 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Consent of instructor is required before enrolling in this course. This course requires a substantial special fee through Sonoran Glass School. Please contact the Arts, Communications and Humanities Division at the West Campus (206-6974) for further information.

ART 266 Furnace Glassblowing II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 265. Includes a review of the glassblowing studio and cold working shop orientation, advanced techniques with hollow and solid glass forms, continued development of blowpipe skills, refinement of cold working glass methods, final project, and visual literacy and critical analysis.

Prerequisite(s): ART 265.

Information: Consent of instructor is required before enrolling in this course. This course requires a substantial special fee through Sonoran Glass School. Please contact the Arts, Communications and Humanities Division at the West Campus (206-6974) for further information.

ART 270 Metalwork II: Jewelry**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 170. Includes design approaches to jewelry making, review of various intermediate techniques, functional considerations involved in jewelry design, and safety and health issues.

Prerequisite(s): ART 170.

ART 280 Weaving II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ART 180. Includes study and exercises using four-eight harness pattern weaves and advanced creative projects. Students may select areas of interest for in-depth exploration.

Prerequisite(s): ART 180

Information: May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 288 Portfolio Preparation**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the development and marketing of a professional portfolio. Includes definition and evaluation of coherent bodies of work, documentation of work, preparation of portfolio production, production of a portfolio, parts of a portfolio, and marketing.

Information: For advanced students who have completed coursework in their specific areas. Portfolio concentrations will be determined in a conference between student and instructor. Same as FDC 288.

ART 289 Portfolio Capstone**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Assembly and production of a professional quality portfolio of the student's own artwork with a focus on personal creativity and a coherent presentation. Includes review of assembly of portfolio materials, presentation of artwork, presentation of ideas and concepts, and a final capstone portfolio review.

Information: Consent of instructor is required before enrolling in this course. A minimum grade of C is required to complete this course.

ART 29611 Independent Study in ART: Art History**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in art history. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29612 Independent Study in ART: Ceramics**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in ceramics. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29613 Independent Study in ART: Metals**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in metals. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29614 Independent Study in ART: Painting, Drawing, and Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in painting, drawing, and design. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29615 Independent Study in ART: Photography**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in photography. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29616 Independent Study in ART: Printmaking**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in printmaking. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29617 Independent Study in ART: Sculpture**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in sculpture. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29618 Independent Study in ART: Fibers**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in fibers. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ART 29619 Independent Study in ART: Glass**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced projects in glass. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course requires a substantial special fee through Sonoran Glass Art Academy. Please contact the Arts, Communications and Humanities Division at the West Campus (206-6974) for further information.

Art For Personal Development

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

APD 062 Acrylic and Oil Painting

2 cr. hrs. 4 periods (1 lec., 3 lab)

Introduction to oil and acrylic painting. Includes painting preparation, composing and building paintings, and developing a personal vision.

Astronomy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AST 101IN Solar System

4 cr. hrs. 6 periods (3 lec., 3 lab)

Introduction to the science of the nature and origin of the solar system: the sun and its family of planets, along with comets and asteroids. Includes the history of astronomy and special topics regarding the space program. Also includes scientific thinking as an application of critical and quantitative thinking, and science in contrast to pseudoscience. Also includes in-class measurement and mathematical exercises, outside observation projects, independent studies, and self-initiated trips to local astronomy facilities.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

AST 102IN Stars, Galaxies, Universe

4 cr. hrs. 6 periods (3 lec., 3 lab)

Introduction to the universe beyond the solar system. Includes the nature of light, how astronomers and telescopes work, and the possibilities of alien life in the universe. Also includes the lifetime of stars, exotic objects such as quasars, pulsars and black holes; and the origin, nature, and future of the universe. Also includes scientific thinking as an application of critical and quantitative thinking and science in contrast to pseudoscience. Also includes in-class measurement and mathematical exercises, outside observation projects, independent studies, and self-initiated field trips to local astronomy facilities.

Prerequisite(s): ICS 081 with a grade of B or better, or MAT 086 with a grade of C or better, or placement into MAT 092, or completion of module 22 in MAT 089A or 089B.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

AST 105IN Life in the Universe

4 cr. hrs. 6 periods (3 lec., 3 lab)

The science of astronomy focusing on the formation of the universe, the solar system, and life. Includes Earth's location in space and time, nature of life, light and the spectrum, origin of the universe, galaxies and stars, origin of the solar system, planetary atmospheres, origin of life on Earth, life on other solar system planets, and life around other stars. Also includes observations, experiments, image analysis, scientific and photogeology laboratory exercise, group telescopic observation projects, and personal observation projects.

Prerequisite(s): ICS 081 with a grade of B or better, or MAT 086 with a grade of C or better, or completion of Module 22 in MAT 089A or 089B, or satisfactory score on the mathematics assessment.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

AST 296LB Independent Study in Astronomy

1-4 cr. hrs. 3-12 periods (3-12 lab)

Experience in astronomical research, projects, or topical studies. Specific content to be determined by student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Automated Industrial Tech

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AIT 100 Industrial Safety**1 cr. hrs. 1 periods (1 lec.)**

Application of all safety, health and environmental requirements associated with all of the NIMS duty areas.

Information: BCT 110 may be substituted for AIT 100.**AIT 105 Maintenance Operations****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the area of maintenance operations of a manufacturing facility. Preparation to sit for the NIMS Duty Area 1: Maintenance Operations Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 110 Mechanical Systems****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the area of basic mechanical systems of a manufacturing facility. Preparation to sit for the NIMS Duty Area 2: Basic Mechanical Systems Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 115 Hydraulic Systems****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the NIMS areas of hydraulic systems of a manufacturing facility. Preparation to sit for the NIMS Duty Area 3: Basic Hydraulic Systems Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 120 Pneumatic Systems****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the NIMS areas of pneumatic systems of a manufacturing facility. Preparation to sit for the NIMS Duty Area 4: Pneumatic Systems Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 125 Electrical Systems I****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the area of electrical systems of a manufacturing facility. Preparation to sit for the NIMS Duty Area 5: Electrical Systems Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 130 Maintenance Piping****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the area of maintenance of piping systems for manufacturing or industrial facilities. Preparation to sit for the NIMS Duty Area 9: Maintenance Piping Certification Exam.

Prerequisite(s): AIT 100 or concurrent enrollment.**AIT 135 Electronics Assembly & Fabrication I****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental principles of assembly and manufacture of electronics. Includes electronics safety, hand and power tool usage, measure tools, quality control/Statistical Process Control, and ElectroStatic Discharge (ESD). Also includes clean room procedures, electronics print reading, wiring harnesses, soldering, desoldering and rework, cleaning, prototyping, and high volume production methods.

AIT 205 Electronic Control Systems I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the area of Electronic Control Systems I of a manufacturing or industrial facility. Preparation to sit for the NIMS Duty Area 6: Electronic Control Systems Certification Exam.

Prerequisite(s): AIT 125.**AIT 210 Electronic Control Systems II****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of AIT 205. Overview of the area of Electronic Control Systems II of a manufacturing and industrial facility. Preparation to sit for the NIMS Duty Area 6: Electronic Control Systems Certification Exam.

Prerequisite(s): AIT 205 or concurrent enrollment.

AIT 215 Process Control Systems**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Overview of the area of Process Control Systems of a manufacturing or industrial facility. Preparation to sit for the NIMS Duty Area 7: Process Control Systems Certification Exam.

Prerequisite(s): AIT 125.

AIT 225 Electrical Systems II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of AIT 125. Overview of the area of electrical systems of a manufacturing facility. Preparation to sit for the NIMS Duty Area 5: Electrical Systems Certification Exam.

Prerequisite(s): AIT 125.

AIT 235 Electronics Assembly & Fabrication II**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of AIT 135. Fundamental principles of creating electronic prototypes, wire and cable termination, electronics safety, and wiring harness assembly. Includes fabrication of electronics enclosures, electrical control systems, and electronic control systems. Also includes checking torque applied to fasteners used in electrical and electronic systems.

Prerequisite(s): AIT 135.

AIT 250 Automated Industrial Technology Capstone**3 cr. hrs. 5 periods (2 lec., 3 lab)**

An examination of the integration of mechanical, hydraulic, pneumatic, electrical, piping, electronic control, and process control systems. Experience in designing, building, maintaining, troubleshooting, and repairing such integrated systems will be gained.

Prerequisite(s): AIT 225 or concurrent enrollment.

AIT 260 Manufacturing Mechanics**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental principles of the application, installation, lubrication, and maintenance of plain, ball and roller bearings. Includes an exploration of gaskets and seals, gear drives, brakes and clutches, linear ball brushings, and ball screw drives.

Prerequisite(s): AIT 110

AIT 270 Robotics I**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental principles of working safely with robots, and applications of and trends in industrial robotics. Includes types of robots, axes and coordinate systems, programming and operating robots. Also includes end effectors, and collaborative robots.

Prerequisite(s): AIT 100 and 105.

AIT 275 Robotics II**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of AIT 275. Fundamental principles of working safely with robots; robot auxiliary, subsystems, and components. Also includes robot maintenance, troubleshooting, repair, and a basic robot design project.

Prerequisite(s): AIT 270

AIT 280 Industry 4.0 and Industrial Control Systems**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental principles of existing and developing automation systems such as Supervisory Control and Data Acquisition (SCADA), Distributed Control Systems (DCS), Smart Factories, Industry 4.0, and the Internet of Things. Also includes an introduction to software used in SCADA and DCS, and practice setting up one of these systems.

Prerequisite(s): AIT 215 or concurrent enrollment.

AIT 285 Sensors and Data Acquisition**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental principles of sensors such as sensor design, function, installation, maintenance, calibration, and repair. Includes brief exploration of signal conditioning, data acquisition, chart recorder operation, and data storage.

Prerequisite(s): AIT 215 or concurrent enrollment.

AIT 291 Automated Industrial Technology Internship**3 cr. hrs. 6 periods (6 lab)**

Supervised work experience in production environments. Includes experiences in maintenance, troubleshooting, repair of production environment and specific manufacturing processes. Also includes experiences in problem solving; working as a team; soft skills; time and resource management; and exposure to specific manufacturing processes.

Prerequisite(s): AIT 225 or concurrent enrollment.

Automotive Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AUT 100 Small Engine Troublesht&Repair**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Small Engine Troubleshoot and Repair. Principles and procedures for overhauling, troubleshooting and repairing small engines. Includes safety and hazardous materials handling, engine types and identification, engine operation and maintenance, disassembly and inspection, engine reconditioning and assembly, fuel and ignition system assembly, mechanical operation and testing, multicylinder engines, and overhead valve (OHV) engines.

AUT 101 Automotive Maintenance**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Automotive Maintenance. Techniques of routine vehicle maintenance. Includes customer vehicle identification and handling, new vehicle pre-delivery inspection and preparation, safety inspection, lubrication tasks, light line tasks, and fluid flushing.

AUT 105 Light Line Maintenance**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for light line service. Includes safety, transmission and driveline systems, air conditioning/heating systems, electrical systems, suspension/steering systems, engine performance, and tools and equipment.

AUT 120 Engine Diagnosis and Repair**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Techniques for light line engine service. Includes personal and environmental safety, general engine diagnosis, lubrication system diagnosis and repair, cooling system diagnosis and repair, cylinder head diagnosis and repair, and engine block diagnosis and repair.

AUT 122 Engine Remove and Install**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Techniques for heavy-line engine exchange. Includes personal and environmental safety, front wheel drive engine removal and installation, and rear wheel drive engine removal and installation.

AUT 124 Automotive Diesel Engine Tune-Up**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Diagnosis, repair, and maintenance of mechanical and electronic diesel engine systems. Includes personal and environmental safety, general engine controls, computerized engine controls, electronic diesel injection, air and fuel induction systems, emissions control systems and electronic communication systems.

AUT 126 Engine Performance and Driveability Troubleshooting**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Diagnosis and repair of On-board Diagnostics Generation One (OBDI) and Two (OBDII) systems. Includes personal and environmental safety, general engine, computerized engine controls, ignition system, fuel, air induction, and exhaust systems, emissions control systems, and engine related service.

AUT 128 Automotive Electrical Fundamentals and Applications**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures of electrical diagnosis and repair. Includes electrical fundamentals and test equipment, electrical system, battery, starting system, charging system, lighting systems, instrumentation, integrated circuits, and computerized control systems.

AUT 129 Automotive Electrical Accessories**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Electrical circuit diagnosis, repair, and replacement. Includes electrical fundamentals and test equipment, accessory diagnosis and repair, tilt steering column repair, and electrical connectors and terminal replacement.

AUT 132 Automotive Drivetrain Removal and Replacement**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for automotive driveline component exchange. Includes personal and environmental safety, general drivetrain diagnosis, and diagnosis and repair of the clutch, automatic and manual transmissions and transaxle, drive axle and differential, and four-wheel drive components.

AUT 133 Automatic Transmission/Transaxle Service and Rebuilding**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for front- and rear-wheel drive automatic transmission overhaul. Includes personal and environmental safety, automatic transmission diagnosis and service, and transmission in-vehicle and off-vehicle repair.

AUT 136 Automotive Manual Transmission and Driveline Service**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for automotive driveline component overhaul. Includes personal and environmental safety, general drivetrain diagnosis, and diagnosis and repair of manual transmission and transaxle, drive shaft and half-shaft, universal and constant-velocity (CV) joint, drive axle and differential, limited slip differential, and four-wheel drive.

AUT 138 Automotive Suspension Systems**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for automotive suspension system service. Includes safety, adjustment and repair of front and rear suspension systems, and related suspension component service.

AUT 139 Automotive Steering and Alignment Systems**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Principles and procedures for automotive steering and alignment systems service. Includes safety, manual and power steering systems, wheel alignment diagnosis, adjustment, and repair. Also includes wheel and tire diagnosis and repair.

AUT 140 Automotive Brakes Diagnosis and Repair**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Diagnosis and repair of automotive hydraulic brake systems. Includes personal and environmental safety, hydraulic system diagnosis and repair, drum and disc brake diagnosis and repair, power assist units diagnosis and repair, wheel bearings, park brake, and brake electrical diagnosis and repair, and anti-lock brake systems (ABS) components and operation.

AUT 142 Automotive Heating, Ventilation, and Air Conditioning**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Diagnosis and repair of automotive heating, ventilation, and air conditioning (HVAC) systems. Includes personal and environmental safety, HVAC systems components, air conditioning (AC) diagnosis and repair, refrigeration system component diagnosis and repair, heating and engine cooling systems diagnosis and repair, operating systems and controls diagnosis and repair, and refrigerant recovery, recycling, and handling.

AUT 185 Automotive Shop Skills Application**.5-3 cr. hrs. 1.5-9 periods (1.5-9 lab)**

Light line diagnosis and repair of daily use vehicles. Includes preparing repair orders, complaint procedures, researching service data, vehicle service and repair tasks, and shop maintenance. Also includes the industry standard of complaint, cause, and correction.

Information: Completion of an AUT prefix course in the same specialty area and approval of automotive department chair or instructor is required before enrolling in this course.

Aviation Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

AVM 100 Aircraft Maintenance Fundamentals**6 cr. hrs. 12 periods (2 lec., 10 lab)**

Introduction to the fundamental knowledge and skill requirements of an Airframe and Powerplant mechanic. Includes fasteners, safety and rigging, aircraft maintenance tools, aircraft types and construction, aircraft materials, theory of flight, and aircraft structures. Also includes powerplant types, aircraft assembly, engine theory, aircraft repair, aircraft reciprocating engine overhaul/repair, aircraft maintenance, aircraft systems and components, rigging flight controls, and jacking aircraft.

Information: AVM 100A and 100B together constitute AVM 100.

AVM 100A Aircraft Maintenance Fundamentals: Module A**3 cr. hrs. 6 periods (1 lec., 5 lab)**

Introduction to the fundamental knowledge and skill requirements of an Airframe and Powerplant mechanic. Includes fasteners, safety and rigging, aircraft maintenance tools, aircraft types and construction, aircraft materials, theory of flight, and aircraft structures.

Information: Constitutes approximately the first one-half of AVM 100. AVM 100A and 100B together constitute AVM 100.

AVM 100B Aircraft Maintenance Fundamentals: Module B**3 cr. hrs. 6 periods (1 lec., 5 lab)**

Introduction to the fundamental knowledge and skill requirements of an airframe and powerplant mechanic. Includes powerplant types, aircraft assembly, engine theory, aircraft repair, aircraft reciprocating engine overhaul/repair, aircraft maintenance, aircraft systems and components, rigging flight controls, and jacking aircraft.

Prerequisite(s): AVM 100A.

Information: Constitutes approximately the second one-half of AVM 100. AVM 100A and 100B together constitute AVM 100.

AVM 105 Aircraft Sheet Metal Repair I**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Principles and procedures for fuselage, wing, and empennage sheet metal repair. Includes safety, hand tools, layout methods, materials, fasteners, repair techniques, parts fabrication, and corrosion prevention and control.

AVM 106 Aircraft Sheet Metal Repair II**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Continuation of AVM 105. Includes safety, bend allowance, layout, fasteners, machine usage, patching techniques and structural repair techniques.

Prerequisite(s): AVM 105.

AVM 110 Aircraft Blueprint Reading**3 cr. hrs. 3 periods (3 lec.)**

Theory and application of aircraft blueprint reading. Includes types of aircraft drawings, measuring tools, drawing and layout equipment, types of views, projections, reference lines, drawing format, title block, manufacturing codes, symbology for fasteners, hardware, and materials. Also includes production of aircraft drawing, sketches, usage of aircraft schematics, graphs, charts, detail, assembly and exploded diagrams.

AVM 114 Regulatory Requirements**3 cr. hrs. 3 periods (3 lec.)**

Federal Aviation Administration (FAA) regulatory requirements. Includes certification of aircraft and components, FAA regulations for aircraft maintenance, FAA publications, manufacturing standards, inspection requirements, maintenance, mechanic certification, maintenance publications and forms, and aircraft logs.

AVM 130 Aircraft Composite Repair I**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Construction and repair processes using advanced composite materials. Includes reinforcing fibers, matrix and core materials, manufacturing of components, composite safety, curing wet layup and prepreg repairs, tools and equipment, and inspection and damage assessment.

Information: Consent of instructor is required before enrolling in this course.

AVM 150 Aircraft Sheet Metal Repair III**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Continuation of AVM 106. Includes repair publications, materials handling, cable fabrication, machining processes, protective coatings, hand forming and structural repair processes.

Prerequisite(s): AVM 106.

AVM 151 Aircraft Sheet Metal Repair IV**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Continuation of AVM 150. Includes locking fasteners, damage classifications, and structural repair processes.

Prerequisite(s): AVM 150.

AVM 165 Aircraft Hardware and Fasteners**3 cr. hrs. 3 periods (3 lec.)**

Aircraft structural repair hardware and fasteners. Includes specifications and standards, types, control linkages, tubing, hose and packings.

AVM 202 Aviation Safety**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Introduction to aviation safety procedures. Includes personal safety issues, human factors, accident avoidance, facility fire protection, hazardous materials safety and handling procedures, ramp procedures for movement, and securing and servicing of aircraft and ramp support equipment. Also includes forklift and scissors lift training.

AVM 203 Aircraft Sheet Metal Repair V**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Continuation AVM 151. Includes jiggging, shoring and alignment, corrosion and heat treatment and structural repair processes.

Prerequisite(s): AVM 151.

AVM 204 Aircraft Sheet metal Repair VI**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Continuation of AVM 203. Includes sealants and sealant applications, heat treatment, plastics and plastic repairs and structural repair processes.

Prerequisite(s): AVM 203.

AVM 205 Motion Dynamics**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Principles of hydraulic power. Includes basic physics, basic mechanics, heat and fluid dynamics, fabrication and installation of fluid lines and fittings, laws of motion, basic aerodynamics, and aircraft nomenclature.

AVM 206 Materials and Processes**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Introduction to non-metallic and metallic structural materials for comparison of their structural properties. Includes structural materials, metal processing, heat treatment, heat treatment of alloys or limited use metals, non-destructive testing/inspection, corrosion, corrosion types and factors, corrosion-prone areas, corrosion control: steel, aluminum, and limited use metals, processes and materials for corrosion control, aircraft cleaning, and aircraft cleaning agents.

AVM 207 Weight and Balance**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Preparation of aircraft for weight and balance. Includes service and maintenance manuals, type certificate data sheets, standard weight and balance practices, weighing an aircraft, calculating center of gravity, and correction of out of balance conditions. Also includes addition and subtraction of equipment, equipment lists, flight manual updates, control surface balancing, identification and selection of standard hardware, installation and assembly of specialty hardware, and use of precision measuring equipment.

Prerequisite(s): GTM 105V.

AVM 208 Basic Electricity**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Introduction to basic aircraft electricity. Includes the study of matter, electron theory, current/electron flow, direct and alternating current, Ohm's Law, Kirchoff's laws, circuit elements, use of testing equipment, and electrical calculation and measurements. Also includes interpretation of schematics and other wiring diagrams, battery theory and maintenance, aircraft electrical systems, and introduction to communication and navigation radio systems.

Prerequisite(s): GTM 105V.

AVM 209 Intermediate Electricity**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Intermediate electricity includes the study of aircraft airframe electrical components as well as airframe and powerplant electrical systems. Includes electric motors, generators and generator controls, alternators, inverters and related controls, power distribution systems, design and maintenance of aircraft electrical systems, digital electronics, analog electronics, communication and navigation systems, communications, weather warning systems, and electric instruments and autoflight systems.

Prerequisite(s): AVM 208.

AVM 211 Alternate Structures**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Aircraft structural fabrication using wood, tube steel and fabric processes and techniques. Includes structural types, wood and welded tube steel fabrication methods, welding of typical metals used in aircraft construction, fabric covering processes, inspection and maintenance typical repair procedures, and aircraft finishings.

AVM 218 Airframe Rigging and Landing Gear Systems**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Identification, assembly, alignment, balancing and rigging of aircraft rigging and landing gear systems. Includes aircraft nomenclature, characteristics of flight, flight control system, airframe assembly, rigging, structural alignments, control surface balancing, landing gear, shock struts, landing gear retraction, wheel alignment and steering, brake system servicing, brake assemblies, wheels, tires, warning systems, and anti-skid system.

AVM 219 Airframe Inspections**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Conformity inspections of airframes. Includes inspections of incoming spare parts and stock items, airframe and equipment conformity inspections, airframe and systems airworthiness and conformity inspections, conformity inspections of installed equipment, annual and 100-hour inspections of small aircraft, including research of all pertinent inspection documents, service or maintenance manuals, type certificate data sheets, airworthiness directives, service bulletins and additional instructions for continued airworthiness, inspection procedures for large aircraft work orders, non-routine job cards used by local aviation maintenance companies.

Prerequisite(s): AVM 114.**AVM 223 Hydraulic and Pneumatic Power****2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Hydraulic and pneumatic system components. Includes system operating principles, fluids, pressures, hydraulic powered flight controls, landing gear, braking and accessory power systems, pneumatically powered or assisted accessories, and system and component inspection servicing and repairs.

AVM 224 Atmospheric Controls**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Atmospheric controls and its elements that are of concern to flight includes control systems; types of operations and maintenance; physiological requirements for flight crews, passengers, and the human support systems. Also includes oxygen systems; cabin pressurization system and their operations; and safety and maintenance requirements.

AVM 225 Fire, Ice, Rain, and Fuel Systems**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Theory and application of fire, ice, rain and fuel systems. Includes fire detection terms, extinguishing and protection systems, smoke detection, fire warning, fire extinguishing system components used, how systems function, inspection testing and maintenance, ice and rain protection terms, formation and conditions for icing of aircraft, ice and rain detection, protection systems components, functions, inspection and maintenance, fuel system terms, safety system requirements, fuel tank types and construction, indicating, fueling, and defueling inspection and maintenance.

AVM 226 Engine Electrical Systems**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Inspection, repair, and modification of engine electrical systems. Includes magneto(s) (components, tooling, wiring, and drives), ignition switches, ignition harness, ignition booster system, spark plugs, engine ignition analyzers, turbine engine (ignition transformers and igniter plugs), engine electrical controls (switches, fuses and circuit breaker, circuits, wiring, installation, and engine bulkhead), and technical data manuals and catalogs.

Prerequisite(s): AVM 208.**AVM 227 Engine Air Flow Systems****2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Fundamentals of engine air flow systems. Includes reciprocating engine induction systems, alternate induction air systems, induction systems maintenance, superchargers, turbochargers, turbo compound systems, reciprocating engine exhaust systems, exhaust subsystems, exhaust system maintenance, reciprocating engine cooling, turbine engine induction systems, turbine engine cooling, turbine engine exhaust systems, turbine engine exhaust systems maintenance, and turbine engine airflow subsystems.

AVM 228 Aircraft Propellers**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Basics of aircraft propellers. Includes propeller theory, nomenclature, types, construction, and installation and maintenance. Also includes constant speed systems, feathering systems, reversing systems, icing systems, synchronizing systems, and unducted fans.

AVM 229 Engine Support Systems**2.5 cr. hrs. 5 periods (1.25 lec., 3.75 lab)**

Theory and application of support systems for gas turbine engines. Includes fire protection, fire detection systems, fire extinguishing agents and systems, and fire detection and extinguishing system maintenance. Also includes turbine engine pneumatic systems, pneumatic starting systems, thrust reversers, auxiliary power units, turbine engine removal and installation, and engine storage and transport.

AVM 231 Engine Principles, Monitoring and Inspection**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Principles, monitoring, and inspection of engines. Includes theory and construction of powerplants, requirements, types of engines, reciprocating engine design and construction, radial engine design and construction, reciprocating engine operating principles, engine power and efficiencies, turbine engine construction, turbine engine sub-assemblies, turbo prop engines, turbine engine operation principles, engine instrumentation, instrument principles of operation, maintenance of instruments and systems, and engine inspection requirements.

AVM 232 Reciprocating Engine Overhaul**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Basic aircraft reciprocating engine overhaul. Includes engine components, wrist pins, connection rods, crankshafts, case, cam shafts, lifters, valves, push rods and tubes, rocker assemblies, accessories, lubrication, overhaul options overhaul credentials, overhaul procedures, reassembly after overhaul, engine installations, engine break-in, and test cell procedures.

AVM 233 Turbine Engines**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Basic gas turbine engine and turbo propeller component makeup and repair. Includes inspection, servicing, and repairs performed on engine components: compressor, diffuser, combustion, accessory drive, and lubricating system. Also includes a reassembly overhaul.

AVM 234 Engine Fuel Metering and Operation**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Fundamentals of aircraft fuel systems. Includes fuel metering theory and requirements, aviation fuels, float type carburetion, float carburetor maintenance and installation, and pressure carburetor maintenance and installation. Also includes fuel injection systems, Bendix fuel injection and maintenance, and Teledyne Continental Motors (TCM) fuel injection and maintenance. Also includes fuel metering system components and maintenance, turbine engine fuel systems components and maintenance, jet fuel controls; and reciprocating, turbine, and turbo propeller engine operations.

AVM 260 Aircraft Composite Repair II**1 cr. hrs. 1 periods (1 lec.)**

Theory and application of composite and bonded metal structures utilized in aircraft construction. Includes repair methods selection, source documents, repair methods and design criteria, bonded metal repairs, tank and non-tank processing, priming, and environmental considerations. Also includes a heavy emphasis on repair performance utilizing the Structural Repair Manuals for composite monolithic and sandwich core, and bonded metal structures.

Prerequisite(s): AVM 130.*Corequisite(s):*AVM 260LB**AVM 260LB Aircraft Composite Repair II Lab****3 cr. hrs. 9 periods (9 lab)**

This is the Lab portion of AVM 260.

Prerequisite(s): AVM 130.*Corequisite(s):*AVM 260

Avionics Technician Training

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ATT 100 Basic Electricity for Avionics**3 cr. hrs. 3 periods (3 lec.)**

Basic electricity for Avionics. Includes the study of matter, electron theory, current/electron flow, direct and alternating current, Ohm's Law, Kirchoff's laws, circuit elements, use of testing equipment, and electrical calculation and measurements. Also includes interpretation of schematics and other wiring diagrams, battery theory and maintenance, aircraft electrical systems, and introduction of solid state components.

Prerequisite(s): GTM 105V.

ATT 101 Avionics Familiarization**3 cr. hrs. 3 periods (3 lec.)**

Overview of the evolution of modern avionics. Includes the role and responsibilities of the avionics technician; the classification and requirements of airports, airspace, and atmospheric environments; and types of avionics equipment used today. Also includes instrument layouts, crew cabin layouts, and advisory circulars and regulations pertaining to operation and management.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 102 Aircraft Electrical Systems**3 cr. hrs. 3 periods (3 lec.)**

Overview of aircraft electrical systems, including AC and DC power generation and distribution for small general aviation (GA), corporate, and commercial airline transport aircraft. Includes electrical schematics, manuals, and diagrams. Also includes aircraft system power requirements for avionics; fuel and flight management; cabin atmospheric control; landing gear and flight controls; load; warning systems; cabin lighting; and entertainment systems.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 103 Basics of Avionics Installation**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Concepts, techniques, and skills used to install electronic and avionics equipment. Includes avionics support structure installation and fabrication; instrument mounting; terminal installation; cutting, sizing, marking, bundling, and anchoring techniques and practices; handling precautions for sensitive devices; and selecting proper equipment and tools. Also includes a review of electrical equipment bays, wiring diagrams, installation drawings, circuit protection devices, lighting processes, and regulatory requirements.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 104 Operating Systems I, Communication and Navigation**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Topical discussion on communication and navigation systems, schematic usage, special tooling and equipment, switching, circuit protection, and instrument panel features. Includes standard wiring practices of single and multiple flight instrumentation sources, location reporting equipment, and essential standard avionics flight devices.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 201 Operating Systems II, GPS Navigation and Auto Pilot**3 cr. hrs. 3 periods (3 lec.)**

Principles of Global Positioning Systems (GPS) and autopilot systems operation and use by flight crews. Includes installation planning for electrical system requirements, typical mounting, wiring methods, connectors, and antenna installation. Also includes pre- and post-installation verification of system integration, functional testing, and troubleshooting on GPS and autopilot systems.

Prerequisite(s): ATT 104.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 202 GPS Navigation and Auto Pilot Installation**5 cr. hrs. 7 periods (3 lec., 4 lab)**

Principles of Global Positioning Systems (GPS) and autopilot systems installation. Includes substantial application of systems, processes, and installations introduced in ATT201, such as installation planning for electrical system requirements, typical mounting, wiring methods, connectors, antenna installation, and operations and use by flight crews. Also includes pre- and post-installation verification of system integration, functional testing, and troubleshooting on GPS and autopilot systems. Also includes an introduction to the installation of engine indicating instruments and their relationship to the instrument console.

Prerequisite(s): ATT 104 and 201.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 203 Avionics Test Equipment**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Overview of the evolution of modern avionics systems, test equipment, and operation of and training on test equipment. Includes functional testing of pitot static, transponder and altitude reporting units, Very High Frequency Omni-directional Range (VOR), Global Positioning Systems (GPS), and compass navigation devices installed in aircraft or functioning mockups. Also includes special tooling and test apparatuses, the handling of aircraft, and safety for personnel and equipment undergoing testing.

Prerequisite(s): ATT 104.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 204 Glass Cockpit Installer**5 cr. hrs. 7 periods (3 lec., 4 lab)**

Installation of glass cockpit systems. Includes panel installation, functional checks, troubleshooting, installation and handling practices for Multifunction Display Units (MFD), Primary Flight Displays (PFD), and Engine Indicating and Crew Alerting Systems (EICAS). Also includes glass cockpit upgrade training, to include the removal of older "steam" gauges and various other indication instruments and replacement with modern glass cockpit indicating systems.

Prerequisite(s): ATT 103 and 104.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 205 Operating Systems III, Infrared and Weather Radar**3 cr. hrs. 3 periods (3 lec.)**

Principles of infrared and weather radar systems operation and use by flight crews. Includes installation planning, electrical system requirements, typical mounting, wiring methods, connectors, and antenna installation. Also includes system integration, functional testing of Enhanced Vision Systems (EVS), Weather (Wx) Radar, and radio altimeter systems. Also includes safety training and the operation, installation, and troubleshooting of EVS systems.

Prerequisite(s): ATT 101 and 102.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

ATT 206 Infrared and Weather Radar Installation**5 cr. hrs. 7 periods (3 lec., 4 lab)**

Installation of weather radar systems, radio altimeter systems, and Enhanced Vision Systems (EVS). Includes schematic use, special tooling and equipment, switching, circuit protection, and instrument panel features for modification for installation. Also includes standard wiring and installation of stand-alone and integrated avionic devices and multifunctional display equipment. Also includes a mandatory requirement that all installed equipment be tested for functionality after installation.

Prerequisite(s): ATT 103 and 205.

Information: Includes an emphasis on system operation, testing, and troubleshooting techniques demonstrated by technicians trained on the aircraft systems. Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.

Behavioral Health Services

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

BHS 132 Communication Skills in Behavioral Health Services**3 cr. hrs. 3 periods (3 lec.)**

Development of communication skills important in establishing and maintaining effective helping relationships. Includes an emphasis on building rapport, improving effective listening skills, establishing trust, and delivering and receiving appropriate feedback. Also includes an overview of the helping process and the professional and physical environments in which counseling occurs.

BHS 154 Behavioral Health Lab and Safety Protocol**3 cr. hrs. 4 periods (2.5 lec., 1.5 lab)**

Introduction to the basic clinical procedures and safety precautions performed by a behavioral health specialist on site in a behavioral health setting. Includes facility, environmental, and patient safety; clinical and observational procedures such as taking vital signs and blood glucose monitoring (point of care testing); and observation and documentation of patients' behavior and physical condition. Also includes personal patient comfort and care, as well as basic medical terminology used in a behavioral healthcare clinical setting.

Prerequisite(s): SSE 128.

BHS 172 Clinical Behaviors**3 cr. hrs. 3 periods (3 lec.)**

Clinical Behaviors Overview of primary clinical behaviors encountered by behavioral health professionals, including substance use, violence and abuse, and grief and bereavement. Includes the spectrum of substance use issues, such as classification of drugs, theories of addiction, cultural perspectives, and treatment interventions. Also includes historical and contemporary causes of domestic violence, community resources, treatment centers and support groups, cultural awareness, and special populations at risk. Also includes techniques, strategies and treatment modalities for working with the bereaved and those affected by traumatic loss.

BHS 189LC Behavioral Health Clinical - Basic**1 cr. hrs. 2 periods (.75 lec., 1.25 lab)**

Provides students with hands on experience at a behavioral health organization. Includes an orientation to working in the behavioral health field; observation of professionals working directly with individuals receiving behavioral health care; professionalism in the behavioral health field; and application of the principles of care giving through hands on experience. Also includes direction in case management; patient relations; case documentation; and safety, clinical, and regulatory protocol.

Prerequisite(s): SSE 128.

BHS 250 Case Documentation**2 cr. hrs. 2 periods (2 lec.)**

Observation and documentation techniques necessary to maintain clinical records in a variety of community behavioral health settings. Includes appropriate terminology, technical forms, and the application of legal issues in case reports. Also includes an introduction to the types of clinical cases that behavioral health professionals encounter during the continuum of care, such as substance use and mental health issues.

Prerequisite(s): SSE 128, BHS 132 and 154.

Biology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

BIO 100HC Biology Concepts: Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Basic principles and concepts of biology. Includes methods of scientific inquiry, cell structure, chemistry, metabolism, reproduction, genetics, molecular biology, evolution, ecology, and current issues in biology. Also includes additional Honors content.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 100IN Biology Concepts**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Basic principles and concepts of biology. Includes methods of scientific inquiry, cell structure and chemistry, metabolism, reproduction, genetics, molecular biology evolution, and ecology and current issues in biology.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 104IN Animal Sexual Behavior**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Exploration of animal mating patterns via behavioral research. Includes animal behavior, evolutionary concepts, genetics of behavior, maximizing reproduction, and student research projects.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 105HC Environmental Biology: Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamentals of ecology and their relevance to human impact on natural ecosystems. Includes ecosystem structure and function, population dynamics, and human impacts on air, water, land, and biodiversity. Also includes additional Honors content.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 105IN Environmental Biology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamentals of ecology and their relevance to human impact on natural ecosystems. Includes ecosystem structure and function, population dynamics, and human impacts on air, water, land, and biodiversity.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 108IN Plants, People and Society**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Past, present and future roles of plants in our lives. Includes basic principles of botany, modern, historical and regional perspectives on human use of plants, and present and future practices in plant cultivation.

Gen Ed: Meets AGEC - SCI and G; Meets CTE - M&S and G.

BIO 109IN Natural History of the Southwest**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Study of the common plants and animals of the Southwest. Includes their identification, adaptation, behavior and ecology. Also includes physical geography and geological principles of the region.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 112IN Bioscience Laboratory Fundamentals**4 cr. hrs. 8 periods (2 lec., 6 lab)**

Preparation of students to become lab technicians by introduction of fundamental skills, knowledge, and attitudes essential to any lab professional. Includes lab safety, documentation, quality control, lab math, validation and verification of results. Also includes understanding government regulations, biological solution preparation, assays, biological separations, and growing cells.

Prerequisite(s): MAT 089, complete module 35, or MAT 095, or MAT 097 (or placement into MAT 151 or higher on the Math assessment test).

BIO 115IN Wildlife of North America**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the mammals, birds, fish, reptiles, amphibians, and selected invertebrates of North America. Includes habitats, wildlife interrelationships, population dynamics, and discussion of national, state, and private wildlife agencies. Also includes a laboratory emphasis on native Arizona species.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 121IN Human Biology and Evolution**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamental principles of human biology emphasizing the evolutionary processes that create human morphological and behavioral diversity. Includes an in-depth study of biological differences existing within and between human populations, focusing on genetic mechanisms and adaptive strategies. Topics of instructor and student interest will be examined through the lens of human evolutionary biology.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 127HC Human Nutrition and Biology: Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of nutrition presented in the context of human biology. Includes chemistry, digestion, absorption, and metabolism of nutrients. Also includes biological and nutritional perspectives on various health issues such as cardiovascular disease, hypertension, cancer, diabetes, and osteoporosis, including genetic and epigenetic effects. Also covers analysis of scientific studies relating to nutrition. Also includes additional Honors content.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Same as FSN 127HC. Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using the highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 127IN Human Nutrition and Biology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of nutrition presented in the context of human biology. Includes chemistry, digestion, absorption, and metabolism of nutrients. Also includes biological and nutritional perspectives on various health issues such as cardiovascular disease, hypertension, cancer, diabetes, and osteoporosis, including genetic and epigenetic effects. Also covers analysis of scientific studies relating to nutrition.

Information: Same as FSN 127IN.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 131 Biosciences I: Laboratory Techniques**3 cr. hrs. 5 periods (2 lec., 3 lab)**

An introduction to a variety of techniques used in biotechnology, molecular biology, and recombinant DNA technology. Includes bioscience lab safety, lab documentation, lab mathematics, biochemical principles, proteins, and DNA. Also includes proper use of lab equipment necessary to work in a research or industrial setting.

Prerequisite(s): MAT 097 with a C or better (or placement into MAT 151 or higher on the Math assessment test), and CHM 130IN (or score of 34 or higher on CHM 130 assessment test: Banner Code CMAS).

BIO 132 Biosciences II: Laboratory Research**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of Biosciences I, with an emphasis in human genetics and biotechnology. Includes career exploration, history and application of recombinant DNA technology, fundamentals of cell biology and genetics, the Human Genome Project, and bioethics. Also includes an emphasis on a variety of advanced biotechniques and skills.

Prerequisite(s): BIO 112IN and 131.

BIO 135IN Genetics, Biotechnology and Human Affairs**4 cr. hrs. 6 periods (3 lec., 3 lab)**

An introduction to human genetics and biotechnology including career exploration, history and applications of recombinant DNA technology, the human genome project, and laboratory safe practices. Includes introduction to biotechnology, fundamentals of cell biology and genetics, applications of biotechnology, bioethics, careers in biotechnology, and laboratory techniques.

Recommendation: Completion of high school chemistry and high school biology before enrolling in this course.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 156IN Intro Biology Allied Health**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introductory Biology for Allied Health Introduction to biology for the health professions. Includes principles of science, scientific measurement and laboratory techniques, chemistry of life, cell anatomy and physiology, cellular reproduction, patterns of inheritances and human tissues.

Recommendation: Completion of CHM130IN before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 157 Basic Histology for Anatomy and Physiology**1 cr. hrs. 1 periods (1 lec.)**

Structure and function of tissues found in the human body. Includes epithelial, connective, muscle, and nerve tissues.

Recommendation: Prior completion of or concurrent enrollment in BIO 181IN is recommended. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Completion of this course and BIO 181IN with grades of "C" or better will enable a student to enroll in BIO 201IN.

BIO 160IN Introduction to Human Anatomy and Physiology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Structure and dynamics of the human body. Includes foundations such as chemical, cellular and tissue levels of organization. Also includes major structures and functions of the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 181HC General Biology I (Majors): Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of structure and function of living things at the molecular and cellular levels of organization. Includes introduction to the scientific process, scientific measurements and laboratory techniques, chemistry of cells, organization of cells, metabolism, cell communication, patterns of cell division, patterns of inheritance, nucleic acids, gene expression, and biotechnology. Also includes additional Honors content.

Prerequisite(s): MAT 097 with a grade of C or better or placement into MAT 151 or higher, and REA 091 with a grade of C or better or placement into REA 112.

Recommendation: WRT 090 or 096 or assessment into WRT 101. CHM 151IN. BIO 100IN or 156IN is recommended for students who did not complete one year of general high school biology with a grade of B or better. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine if funding eligibility as appropriate.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 181IN General Biology I: (Majors)**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of structure and function of living things at the molecular and cellular levels of organization. Includes introduction to the scientific process, scientific measurements and laboratory techniques, chemistry of cells, organization of cells, metabolism, cell communication, patterns of cell division, patterns of inheritance, nucleic acids, gene expression, and biotechnology.

Prerequisite(s): MAT 097 with a grade of C or better or placement into MAT 151 or higher, and REA 091 with a grade of C or better or placement into REA 112.

Recommendation: Completion of BIO 182IN, CHM 151IN, WRT 090 or 096 or assessment into WRT 101 before enrolling in this course. BIO 182IN is recommended before BIO 181IN for those students pursuing the Associate of Science degree with a concentration in Biology pathway. BIO 100IN or 156IN is recommended for students who did not complete one year of general high school biology with a grade of B or better. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SCI; Meets CTE M&S

BIO 182HC General Biology II (Majors): Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of living things at the levels of organism, population, community, and ecosystem. Includes evolution of life, classification of organisms, survival strategies, interactions between organisms and with their environment, ecosystem structure, and human impacts upon the biosphere. Also includes additional Honors content.

Recommendation: Completion of BIO 181 before enrolling in this course.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before enrolling in this course. Honors Content may include: Intensive research using the highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 182IN General Biology II: (Majors)**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of living things at the levels of organism, population, community, and ecosystem. Includes evolution of life, classification of organisms, survival strategies, interactions between organisms and with their environment, ecosystem structure, and human impacts upon the biosphere.

Recommendation: Completion of BIO 100IN or 156IN is recommended for students who did not complete one year of high school Biology with a grade of B or better. BIO 182IN is recommended before BIO 181IN for those students pursuing the Associate of Science degree with a concentration in Biology pathway. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SCI; Meets CTE M&S

BIO 183IN Marine Biology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Survey of marine environments and their biotic communities. Includes scientific measurements and laboratory techniques, principles of marine science, life in the marine environment, structure and function of marine ecosystems, and humans and the sea. Also includes an emphasis on the natural history of marine organisms.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 184IN Plant Biology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Study of principles and processes in plant biology with emphasis on vascular plants. Includes plant structure, plant physiology and development, genetics, and evolution, and ecology.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 201IH Human Anatomy, Physiology and Histology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Structure and function of the body. Includes introduction to the scientific process, scientific measurements, laboratory techniques such as microscope use, levels of organization, chemistry as applied to physiology, cell biology, gene regulation, homeostasis, anatomical terms, integumentary system, skeletal system and articulations, muscular and nervous systems, and special senses, as well as histology of these systems.

Prerequisite(s): Completion of MAT 092 or MAT 097 or placement into MAT 142 or MAT 151; and REA 091 with a C or better or placement into REA 112; and WRT 090 or 096 with a grade of C or better or placement into WRT 101.

Recommendation: One year of general high school biology with a grade of B or better; if student has not completed high school biology with a grade of B or better, it is recommended to register for BIO 156IN and BIO 201IN instead of BIO 201IH. If any recommended course is taken, see a financial aid or Veteran's Advisor to determine funding eligibility as appropriate.

Information: This course combines elements from BIO 156IN and meets the prerequisites for BIO 202IN.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 201IN Human Anatomy and Physiology I**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Structure and function of the body. Includes levels of organization, homeostasis and disease, anatomical terms, integumentary system, skeletal system and articulations, muscular and nervous systems, autonomic nervous system, and special senses.

Prerequisite(s): BIO 156IN, or BIO 181 and BIO 157, with a grade of C or better; completion of a 200 level (or higher) Human Anatomy and Physiology course; or a passing grade on the Biology Assessment Exam.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 202IN Human Anatomy and Physiology II**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of BIO 201IN/IH. Includes the structure and function of the endocrine cardiovascular, lymphatic/immune, respiratory, digestive, urinary, and reproductive systems.

Prerequisite(s): BIO 201IN or 201IH with a grade of C or better.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 203 Anatomy and Physiology Review for Health Related Professions**2 cr. hrs. 2 periods (2 lec.)**

Review of human body systems which includes clinical application of human anatomy and physiology. Includes the nervous system, endocrine system, metabolism, cardiovascular system, respiratory system, urinary system, digestive system; and fluid, electrolyte, and pH balance.

Prerequisite(s): BIO 201IN and BIO 202IN with a grade of C or better.

Recommendation: For students who are preparing to take board exams in the health related professions, or those who wish to review anatomy and physiology.

Information: May be taken 3 times for a maximum of 6 credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Financial aid may not cover this class if it is taken outside of a normal semester. eligibility as appropriate. Financial aid may not cover this class if it is taken outside of a normal semester.

BIO 205IN Microbiology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Overview of the microbial world (bacteria, protozoa, fungi, and viruses). Includes microbial cell structure and function, diversity of microorganisms, growth, metabolism, microbial genetics, the identification of microorganisms, and the role of microorganisms in disease and immunity. Also includes principles of microbial control, antibiotic resistance, epidemiology and pathogenesis, as well as laboratory exercises to provide first hand experience with the organisms and processes discussed in lecture.

Prerequisite(s): BIO 156IN, or 181IN, or 201IH, or 201IN, or required score on the Biology assessment test.

Recommendation: Completion of CHM 130IN or equivalent. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

BIO 218 Human Pathophysiology**4 cr. hrs. 4 periods (4 lec.)**

Pathophysiological processes in humans and the development of clinical reasoning skills that distinguish between normal physiology and the physiology of disease or injury. Includes the etiology, clinical presentation, and appropriate treatment of selected disease processes. Also includes the pathophysiology of the hematological, cardiovascular, pulmonary, renal, endocrine, gastrointestinal, pancreatic, neurologic, musculoskeletal and reproductive systems.

Prerequisite(s): BIO 201IN, 202IN, and 205IN with a grade of C or better.

Information: This course is a prerequisite for the concurrent Associate Degree/Baccalaureate Degree Nursing program through Pima Community College and Northern Arizona University.

BIO 220 Introduction to Neurobiology and Cognitive Science**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals of nervous system's structures, pathways, connections, and functions. Includes introduction to the principles of neuroanatomy, cellular and systems neurobiology, and cognitive neuroscience. Also includes examination of normal brain function compared to neuropathology; survey data from work with animals, humans, machines and how it has furthered our understanding of complex human behavior; and social significance of brain research.

Prerequisite(s): With a grade of C or higher: BIO 181IN or 201IH or 201IN or 202IN.

BIO 250 Biomedical Ethics**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the nature and scope of decision making in public health, medicine and health care, as it relates to bioethical issues. Includes overview of dilemmas in bioethics, legal, social and ethical issues in human genetics, the beginning of life, and the end of life. Also includes life and death decisions, human organ transplantation, and regulations of human research.

Prerequisite(s): WRT 101 with a grade of C or better.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE - SBS and G.

BIO 291 Biology Internship**1-3 cr. hrs. 3-9 periods**

Supervised work experience in a bioscience industry or academic research lab setting. Includes emphasis on the observation and enhancement of professional and management skills, team communication and interaction. Also includes the application of research principles, procedures, protocols, and regulations in the workplace. Student may rotate through a variety of industry or academic research sites agreed upon by the instructor and student.

Prerequisite(s): BIO 132 or concurrent enrollment, and 156IN.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of three credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. One credit hour is equivalent to 45 clock hours at internship site.

BIO 295LB Independent Research in Biology**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Experience in scientific laboratory or field research. Specific content to be determined by student and instructor.

Information: One semester of biology and consent of instructor is required before enrolling in this course. May be taken three times for a maximum of twelve credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

BIO 296 Special Projects in Biology**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Exploration of special interest areas. Content to be determined by student and facilitator/instructor.

Information: One year of biology is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Building/Construction Tech

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

BCT 100 Professionalism in Service for BCT

1 cr. hrs. 1 periods (1 lec.)

Procedures in business and customer service. Includes an introduction to professionalism, self-evaluation, service routine, addressing dissatisfied customers, and problem situations.

BCT 101 Principles of Construction

3 cr. hrs. 3 periods (3 lec.)

Introduction to the principles of construction. Includes the building delivery process, government constraints, green building and sustainable design, calculating loads and resistance factors, and composition, closing process, codes, and Green Building Certification and Award.

BCT 102 Building Materials

3 cr. hrs. 3 periods (3 lec.)

Construction standards and specific types of building materials used in commercial, industrial, residential and private construction projects. Includes beginning construction standards, site work, concrete, masonry, metals, wood and wood products, thermal and moisture protection, doors and windows, finishes, specialties, equipment, furnishings, special construction, conveying systems, mechanical systems, and electrical systems.

BCT 104 Introduction to Equipment Maintenance

4 cr. hrs. 6 periods (2 lec., 4 lab)

Procedures and concepts for maintaining buildings in a commercial/industrial setting. Includes preventative maintenance requirements, maintenance terminology, industrial tool use, electrical equipment maintenance, electrical feed, bearing applications, sheaves applications, flexible drives and V-belts, centrifugal pump maintenance, vacuum pump maintenance, fire suppressant system maintenance and repair, metal fabrication, steel pipe plumbing, as-built print reading, lubricants, and interior wall frame/ construction.

Prerequisite(s): BCT 132 or concurrent enrollment.

BCT 105 Professionalism in Service, Construction Math, Basic Rigging

3 cr. hrs. 3 periods (3 lec.)

Concepts, procedures and techniques in service, construction math, and rigging. Includes an introduction to professionalism, self-evaluation, service routine, addressing dissatisfied customers, and problem situations. Includes basic mathematics concepts and employability in the construction industry. Also includes how to safely handle and use rigging equipment.

Information: Equivalent to BCT 100, BCT 112, and BCT 115.

BCT 106 Soldering and Brazing for BCT

4 cr. hrs. 6 periods (2 lec., 4 lab)

Principles and technologies of joining different types of alloys by braze welding and soldering. Includes safety and health, procedures and design, pre-cleaning and surface preparation, filler metals, fluxes and atmospheres, torch brazing, pipe and tube, copper, and cast iron.

Prerequisite(s): BCT 105 and 107 or concurrent enrollment.

Information: BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.

BCT 107 Basic Safety, Hand & Power Tools, Blueprint Reading

3 cr. hrs. 3 periods (3 lec.)

Introduction to federal safety standards, tools, and blueprint reading in the construction industry. Includes employer responsibility-employee right to know, personal protective equipment, material handling, hand and power tools, electrical hazards, hazards communication standards, fire safety, scaffolds, and fall protection. Also includes basic concepts in blueprint reading terminology, components, lines, locations, dimensions, production techniques, parts, and locations.

Information: Equivalent to BCT 111, BCT 113, and BCT 114.

BCT 109 NCCER Core Introductory Craft Skills

5.75 cr. hrs. 6.65 periods (4.85 lec., 1.8 lab)

National Center for Construction Education and Research (NCCER) core introduction to craft skills. Includes basic safety, basic construction math, introduction to hand tools, introduction to power tools, basic construction drawings, basic communications skills, basic employability skills, and introduction to material handling. Also includes as an elective an introduction to basic rigging.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G, BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109A NCCER Core Basic Craft Safety**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

National Center for Construction Education and Research (NCCER) Core basic craft safety. Includes safety and hazard recognition, elevated work and fall protection, struck-by and caught-in-between hazards, energy release hazards, personal protective equipment (PPE), and job-site hazards.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109B NCCER Core Basic Construction Math**.75 cr. hrs. .75 periods (.75 lec.)**

National Center for Construction Education and Research (NCCER) Core basic construction math. Includes whole numbers, fractions, the decimal system, measuring length, converting between the imperial and metric systems, and basic angles and geometric shapes.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109C NCCER Core Introduction to Hand Tools**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

National Center for Construction Education and Research (NCCER) Core introduction to hand tools. Includes types of hand tools, measurement and layout tools, cutting and shaping tools, and common hand tools used by skilled craft workers.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109D NCCER Core Introduction to Power Tools**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

National Center for Construction Education and Research (NCCER) Core introduction to power tools. Includes power drills, impact wrenches, power saws, grinders and their associated attachments, and miscellaneous power tools commonly used by skilled craft workers.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109E NCCER Core Basic Construction Drawings**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

National Center for Construction Education and Research (NCCER) Core basic construction drawings. Includes types of construction drawings, drawing components, drawing elements, dimensions and measuring scales.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109F NCCER Core Basic Communications Skills**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

National Center for Construction Education and Research (NCCER) Core basic communications skills. Includes basic verbal communications, active listening, basic reading and basic writing skills employed by skilled craft workers.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109G NCCER Core Basic Employability Skills**.5 cr. hrs. .5 periods (.5 lec.)**

National Center for Construction Education and Research (NCCER) Core basic employability skills. Includes opportunities in the construction industry, critical thinking and problem solving, and relationship and social skills.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109H NCCER Core Introduction to Materials Handling**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

National Center for Construction Education and Research (NCCER) Core introduction to materials handling. Includes principles of materials handling and materials handling equipment.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 109I NCCER Core Introduction to Basic Rigging**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

National Center for Construction Education and Research (NCCER) Core introduction to basic rigging. Includes basic rigging hardware and emergency communications.

Information: BCT 109A, BCT 109B, BCT 109C, BCT 109D, BCT 109E, BCT 109F, BCT 109G and BCT 109H, and BCT 109I comprise BCT 109. These courses are equivalent to the NCCER Core Introduction to Craft Skills (Fifth Edition). BCT 109A through BCT 109H, NCCER Core Introduction to Craft Skills, are prerequisites for students wishing to earn additional NCCER certifications.

BCT 110 OSHA 10 for the Construction Industry**1 cr. hrs. 1 periods (1 lec.)**

Introduction to Occupational Safety and Health Administration (OSHA) 10 concepts and applications. Includes worker rights and employer responsibilities, how to file a complaint, and how to identify, abate, avoid, and prevent job-related hazards. Also includes the four types of hazards commonly found on construction sites.

BCT 111 Basic Safety for the Building Trades**1 cr. hrs. 1 periods (1 lec.)**

Introduction to federal safety training standards. Includes employer responsibility-employee right to know, personal protective equipment, material handling, hand and power tools, electrical hazards, hazards communication standards, fire safety, scaffolds, fall protection, cranes, and stairways and ladders.

Information: Successful completion of this course qualifies the student for the 10 hour safety training card.

BCT 112 Construction Mathematics, Communication and Employability**1 cr. hrs. 1 periods (1 lec.)**

Introduction to basic mathematics concepts and employability in the construction industry. Includes whole numbers, measurements, fractions, decimals, conversion process, metric system, construction geometry, reading, writing, listening and speaking skills, employability in the construction business, critical thinking and computer skills, relationship skills, and workplace issues.

Information: Mathematics assessment test is required before enrolling in this course.

BCT 113 Hand and Power Tools**1 cr. hrs. 1 periods (1 lec.)**

Selection and safety procedures. Includes trades terms, hand tool, and power tool use to specific jobs in the construction industry.

BCT 114 Blueprint Reading**1 cr. hrs. 1 periods (1 lec.)**

Basic concepts of blueprints. Including terms and symbols, components, measuring tools, line types and symbols, abbreviations, grid lines, plan locations, and dimensions, production techniques, and blueprint reading parts and locations.

BCT 115 Basic Rigging**1 cr. hrs. 1 periods (1 lec.)**

Rigging hardware and equipment. Includes safety, rigging equipment, inspection, crane hand signals, estimating an object, common rope knots, types of derricks and cranes, rigging and moving equipment use, and handling hazardous material.

BCT 120 Blueprint Reading for Construction**3 cr. hrs. 3 periods (3 lec.)**

Residential and light commercial blueprint reading. Includes blueprint symbols and terminology, construction materials, applications and specifications for commercial buildings, light frame and brick veneer construction, and appropriate mathematics.

Recommendation: Completion of BCT 107 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: BCT 111, 113, and 114 substitute for BCT 107.

BCT 123 Concrete/Masonry**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Basic concepts and materials for concrete construction, finishing, and masonry work. Includes trade terminology, composition and characteristics of concrete, uses of concrete as a building material, effects of craftsmanship on finished concrete, concrete construction process, site operations and work set-up, history of masonry, and modern masonry materials and methods.

BCT 130 EPA Clean Air Act: Section 608**1 cr. hrs. 1 periods (1 lec.)**

Freon certification preparation. Includes basics of refrigerant bearing equipment, ozone depletion and the new legislation, technician categories covered on the certification examination, and certification testing.

BCT 132 Residential and Industrial HVAC I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to materials and procedures for heating, ventilating, and air conditioning (HVAC). Includes trade mathematics, copper and plastic piping practices, soldering and brazing, ferrous metal piping practices, basic electricity, introduction to cooling and heating, and air distribution systems.

Prerequisite(s): BCT 105 and 107.*Information:* BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.**BCT 133 Residential and Industrial HVAC II****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 132. Introduction to commercial airside systems. Includes chimneys, vents, flues, hydronic systems, air quality equipment, leak detection, evacuation, recovery, charging, alternating current, and basic electronics.

Prerequisite(s): BCT 132.**BCT 134 Residential and Industrial HVAC III****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 133. Introduction to the principles of heat transfer, humidity, filtering, and energy saving devices used in HVAC systems. Includes accessories and optional equipment, metering devices, compressors, heat pumps, leak detection, evacuation, recovery, and charging.

Prerequisite(s): BCT 133 or concurrent enrollment.**BCT 135 National Electrical Code Residential Wiring Applications****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Electrical wiring and installation conforming to National Electrical Code requirements. Includes grounded systems, requirements for over-current protection of conductors, ampacity criteria, installing over-current protection of conductors, installing services, installing motors and transformers, remote control and signaling circuits, and installing structured wiring in homes and offices.

Prerequisite(s): BCT 172.**BCT 145 Carpentry I****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Theories and concepts for carpentry. Includes orientation to the trade, wood building materials, fasteners and adhesive, hand and power tools, floor systems, wall, ceiling, and roof framing, and windows and exterior doors.

Prerequisite(s): BCT 105 and 107 or concurrent enrollment.*Information:* BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.**BCT 146 Woodworking I****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Concepts and procedures for working with hardwoods. Includes introduction to hardwoods, measuring hardwoods, use of hardwoods, pressure treated wood, hardwood preparation, ripping wood, miter cuts, cross cuts, job site safety, gluing and clamping, veneers, curves and circles, dados and rabbets, and smoothing wood.

BCT 147 Woodworking II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

A continuation of BCT 146. Advanced topics in woodworking. Includes safety practices; designing and planning; measuring and cutting; planing, chiseling, and sanding; butt, biscuit and dowel joints; rabbet joints; dado joints; lap joints; miter joints; mortise-and-tenon joint; veneers; using fasteners, dovetail joints and case casework; and applying stains and clear finishes.

Prerequisite(s): BCT 146 or concurrent enrollment.*Information:* Prerequisite(s) may be waived with consent of instructor.

BCT 148 Cabinetmaking I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Concepts and procedures for fine woodworking practices. Includes introduction to cabinetmaking, cabinetry styles, human factors, working drawings, lumber and millwork, manufactured panel products, veneers and plastic overlays, hardware, health and safety, measuring and laying out materials, stationary power machines, hand and portable power tools, surfacing and shaping, and building a basic cabinet.

Prerequisite(s): BCT 146 or concurrent enrollment.

BCT 149 Cabinetmaking II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of BCT 148. Includes turning, joint making, abrasives and sanding machines, gluing and clamping, bending and laminating wood, overlaying and inlaying veneer, installing plastic laminates, advanced case construction, doors, drawers, applying finishing materials, kitchen cabinets, industrial production cabinetmaking, and employment in cabinetmaking.

Prerequisite(s): BCT 148.

Information: Prerequisite may be waived with appropriate carpentry/cabinetmaking skills. See an instructor or department chair for information.

BCT 150 Plumbing Basics**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Theories and concepts for plumbing and pipe fitting. Includes physics for plumbers, plumbing materials, water supplies, drainage, sewage disposal, pipe joint connections, pipe fittings, rough-in, valves and faucets, and fixtures.

Prerequisite(s): BCT 111.

BCT 153 Finishing Techniques in Cabinet and Furniture Making**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Wood finishing techniques for cabinet and furniture making. Includes safe and effective use of a variety of wood finishes and finishing equipment, reasons for finishing wood, tools for applying finishes, oil finishes, wood stains, pore fillers, introduction to film finishes, shellac, lacquer, varnish, water-based finishes, conversion finishes, choosing a finish, "finishing" the finish, caring for wood finishes, repairing finishes, finishing different woods, and strippers.

Recommendation: Woodworking and cabinetmaking experience helpful. See a BCT faculty member for assistance.

BCT 159 Furniture Design and Construction**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Wood furniture-making techniques for hobbyists and professionals. Includes basic material; tools and equipment safety and use; basic techniques and joint construction; advanced areas of furniture construction; metal fittings/fasteners and their application; advanced techniques in furniture making; drafting and workshop geometry; furniture designs and construction details; and restoration, repairs, and wood finishing.

Prerequisite(s): BCT 147.

BCT 172 Electrical I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Concepts and procedures for building and construction electrical training. Includes safety, conduit bending, electrical theory, test equipment, National Electric Code, raceways, boxes, and fittings, print reading, and wiring applications.

Prerequisite(s): BCT 105 and 107 or concurrent enrollment.

Information: BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.

BCT 173 Electrical II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 172. Includes alternating current, motor installation, grounding of structures and equipment, conduit bending, electrical boxes and fittings, and conductor installations.

Prerequisite(s): BCT 172.

BCT 174 Electrical III**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 173. Includes conductor installation, cable tray, conductor termination and splices, electric service installation, circuit breakers and fuses, contactors and relays, and electrical lighting.

Prerequisite(s): BCT 173 or concurrent enrollment.

BCT 181 Residential and Industrial Plumbing I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to common types of piping, their proper fitting, fixtures, and distribution systems. Includes introduction to the plumbing trade and drawings; plastic, copper, cast-iron, and carbon steel piping; fixtures and faucets; introduction to drainage, waste, and vent (DWV) systems; and water distribution systems.

Prerequisite(s): BCT 105 and 107 or concurrent enrollment.

Information: BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.

BCT 182 Residential and Industrial Plumbing II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Concepts and practices for plumbing. Includes offsets around obstructions, reading commercial drawings, installing and testing drainage, waste, and vent (DWV) piping system, installing roof, floor and area drains, and servicing various types of valves.

Prerequisite(s): BCT 181.

BCT 183 Residential and Industrial Plumbing III**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 182. Concepts and installation procedures for water service, fixtures, and appliances. Includes installing and testing water supply piping, fixtures, valves, and faucets; electrical applications; water heaters; fuel gas systems; and servicing of fixtures, valves, and faucets.

Prerequisite(s): BCT 182 or concurrent enrollment.

BCT 184 National Electrical Code I**3 cr. hrs. 3 periods (3 lec.)**

Requirements for the installation of electrical conductors, equipment, raceways, cables, and special occupancies. Includes introduction to the National Electrical Code, wiring and protection, wiring methods and materials, and equipment for general use.

Prerequisite(s): BCT 172.

Information: BCT 184 and 284 together provide preparation for the National Electrical Code certification exam.

BCT 190 Fieldwork for Construction**1-8 cr. hrs. 5-40 periods (5-40 lab)**

Supervised fieldwork experience on a specific construction project at the project site.

Prerequisite(s): BCT 105 and 107.

Information: May be taken two times for a maximum of sixteen credit hours. If this course is to be repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. BCT course work or field experience will be necessary for success in this course. See a BCT instructor or department chair for more information. BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.

BCT 202 Construction Business Management**3 cr. hrs. 3 periods (3 lec.)**

Overview of construction business and project management. Includes planning and organizing, risk management, project management, estimating, scheduling, environmental and safety laws, employer obligations, financial management, contract law, and Arizona state requirements for contractors.

BCT 204 Construction Surveying**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Principles and techniques of construction surveying. Includes taping, leveling, transit, contour and topographic mapping, and construction surveying.

Prerequisite(s): Within the last three years: MAT 086 with a C or better or MAT 089A through Module 15 or GTM 105 with a C or better or required score on the Mathematics assessment test.

Recommendation: Completion of BCT 120 before enrolling in this course. If any recommended course is taken, see a financial aid Veteran's Affairs advisor to determine funding eligibility as appropriate.

BCT 231 Residential and Industrial HVAC IV**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 134. Includes refrigerants and oil, compressors, metering devices, retail refrigeration systems, commercial hydronic systems, and steam systems.

Prerequisite(s): BCT 134.

BCT 232 Residential and Industrial HVAC V**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 231. Includes planned maintenance, water treatment, troubleshooting electronic controls, troubleshooting oil heating, troubleshooting heat pumps, and troubleshooting accessories.

Prerequisite(s): BCT 231 or concurrent enrollment.

BCT 233 Residential and Industrial HVAC VI**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 232. Includes construction drawings and specifications, indoor air quality, energy conservation equipment, and building management systems.

Prerequisite(s): BCT 232.

BCT 234 Residential and Industrial HVAC VII**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 233. Includes water treatment, system startup and shutdown, heating and cooling system design, and commercial and industrial refrigeration systems.

Prerequisite(s): BCT 233 or concurrent enrollment.

BCT 235 National Electric Code Commercial Wiring Applications**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Commercial electrical wiring and installation practices conforming to the National Electric Code. Includes commercial building plans, specifications, and drawings, electrical loads and branch circuits, switches and receptacles, branch circuit installations, motor and appliance circuits, feeders, special systems and circuits, panelboard selection and installation, electric service equipment, lamps and luminaries, emergency and standby power systems, and overcurrent protection.

Prerequisite(s): BCT 135.

BCT 236 Residential and Industrial Plumbing IV**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 183. Concepts that apply to plumbing installations. Includes applied math, sizing water supply piping, potable water treatment, and backflow preventers.

Prerequisite(s): BCT 183.

BCT 237 Residential and Industrial Plumbing V**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 236. Includes types of venting; sizing DWV and storm systems; sewage pumps and sump pumps; corrosive resistant waste piping; and compressed air.

Prerequisite(s): BCT 236 or concurrent enrollment.

BCT 238 Residential and Industrial Plumbing VI**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 237. Includes concepts and practices essential to competitive and successful plumbing businesses. Also includes business principles for plumbers, introductory skills for the crew leader, water pressure booster and recirculation systems, indirect and special waste, and hydronic and solar heating systems.

Prerequisite(s): BCT 237.

BCT 239 Residential and Industrial Plumbing VII**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 238. Includes codes; servicing piping systems, fixtures, and appliances; private water supply well systems; private waste disposal systems; swimming pools and hot tubs; and plumbing for mobile homes and travel trailers.

Prerequisite(s): BCT 238 or concurrent enrollment.

Information: BCT coursework or field experience will be necessary for success in this course. See a BCT instructor or department chair for more information.

BCT 245 Carpentry II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 145. Includes techniques for reading construction drawings and specifications, site layout, measurement, and leveling, concrete materials and concrete reinforcement materials, construction of forms for footings and on-grade slabs, and concrete forms.

Prerequisite(s): BCT 145.

BCT 265 Sustainability for Building Trades**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals of sustainable design. Includes green building practices and implementation. Also includes green building concepts, site and building planning and development, materials, strategies, cost benefit analysis, and practical applications in the current construction business environment.

BCT 271 Electrical IV**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 174. Includes load calculations-branch and feeder circuits, conductor selection and calculations, practical applications of lighting, hazardous locations, and overcurrent protection.

Prerequisite(s): BCT 174 or concurrent enrollment.

BCT 272 Electrical V**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 271. Includes distribution equipment, transformers, commercial electrical services, motor calculations, voice, data, and video, and motor controls.

Prerequisite(s): BCT 271.

BCT 273 Electrical VI**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 272. Includes load calculations-feeders and services, health care facilities, standby and emergency systems, basic electronic theory, fire alarm systems, and specialty transformers.

Prerequisite(s): BCT 272 or concurrent enrollment.

BCT 274 Electrical VII**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of BCT 273. Includes advanced controls, signaling systems, specialty transformers, standby and emergency systems, welding machines, HVAC controls, and heat tracing and freeze protection.

Prerequisite(s): BCT 273.

BCT 284 National Electrical Code II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of BCT 184. Includes introduction to the National Electrical Code, special occupancies, special equipment, special conditions, and communication systems.

Prerequisite(s): BCT 184 or concurrent enrollment.

Information: BCT 184 and BCT 284 together provide preparation for the National Electrical Code certification exam.

BCT 286 International Residential Code (IRC) I**3 cr. hrs. 3 periods (3 lec.)**

Requirements of the major systems of residential building construction (other than commercial). Includes administration, definitions, building planning, foundations, floors, wall construction, wall covering, roof-ceiling construction, roof assemblies, chimneys and fireplaces.

Recommendation: Completion of general construction field experience before enrolling in this course.

BCT 287 International Residential Code (IRC) II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of BCT 286. Includes energy efficiency, mechanical systems, plumbing systems, electrical systems, and referenced standards.

Prerequisite(s): BCT 286.

BCT 290 Building and Construction Technologies Capstone**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Supervised workplace placement in the building construction trades field. Includes the application of building construction concepts and techniques. Also includes critical thinking, problem solving, personnel management, leadership, oral and written communication skills.

Information: Student must be working toward an AAS in Applied Technology. Satisfactory completion of pathway for three semesters or instructor approval. The students' work experience is coordinated by a member of the College's faculty or professional staff or by staff of the contracted/contracting agency; the primary supervision is from the employer or other individual contracted to provide the experience. Contingent on the agreement between the student and the employer, students may or may not receive remuneration for workplace learning experiences. Note: This definition applies to all experiences in which the student applies concepts and practices learned previously or concurrently to facilitated observation and/or practical work situations within an occupational field. BCT course work or field experience will be necessary for success in this course. See the BCT Department Head or Discipline Coordinator for more information.

Business

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

BUS 100 Introduction to Business

3 cr. hrs. 3 periods (3 lec.)

Principles of business operations in the private enterprise system. Includes business ethics, social responsibility, the economic and global environment, structures of American business, management and leadership theories, organizational structures, human relations, production processes, marketing principles, information systems, accounting, and financing the enterprise.

BUS 125 eCommerce

3 cr. hrs. 3 periods (3 lec.)

Introduction to conducting business on the Internet. Includes electronic commerce terminology, locating information, business applications, legal issues and security, and web site components and connectivity. Also includes marketing on the Internet, career opportunities, future developments, and building and operating a successful e-commerce store.

BUS 148 Ethics in the Workplace

3 cr. hrs. 3 periods (3 lec.)

Ethical principles in decision making applied to the business and industry workplace. Includes ethical issues in decision making, ethical frameworks for decisions, personal values and ethical priorities, ethics in business and industry, ethical standards in the workplace, ethical choices, application of ethical principles, social and cultural values applied to decisions, and workplace culture.

Gen Ed: Meets AGEC - OTHER; Meets CTE - OTHER.

BUS 151 Mathematics of Business

3 cr. hrs. 3 periods (3 lec.)

Applying mathematical procedures, using algebraic techniques, critical thinking, and problem-solving methods for practical utility in the business environment. Includes math review; bank records; payroll; trade and cash discounts; markup and markdown; simple and compound interest; present and future value; annuities and sinking funds; consumer credit; depreciation; inventory, overhead, and turnover; financial statements; insurance; taxes; and stocks and bonds.

Prerequisite(s): Completion ICS 081 with a grade of B or better, module 22 in MAT 089A or 089B, or placement into MAT 092.

Gen Ed: Meets CTE - M&S.

BUS 205 Statistical Methods in Economics and Business

3 cr. hrs. 3 periods (3 lec.)

Introduction to statistical concepts and methods of business. Includes statistics, data, and statistical thinking; methods for describing sets of data, probability, sampling distributions, inferences based on single sample and two samples; estimation with confidence intervals and tests of hypothesis; correlation and regression; time series; design of experiments; analysis of variance (ANOVA), and categorical data analysis.

Prerequisite(s): MAT 212 or 220.

Information: MAT 172 or 173 may be accepted as the prerequisite if taken prior to Fall 2013. Basic Excel knowledge is required before enrolling in this course.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

BUS 220 Legal Environment of Business

3 cr. hrs. 3 periods (3 lec.)

Overview of the impact of law, ethics and corporate responsibility in business. Includes basic concepts of law, structure, characteristics, the administration thereof, and continues through the many facets of business and the law including without limitation, formation, operation, ethics, corporate responsibility, agency, contracts, and government regulation.

BUS 277 Analytical Methods in Business

4 cr. hrs. 4 periods (4 lec.)

Business statistic topics and applications. Includes descriptive measures and continuous probability distributions; sampling distributions, hypothesis testing, statistical inference, analysis of variance, correlation and regression with an emphasis placed on application to business cases using data rich case analysis. Also includes Excel and SPSS workshops for statistical analyses on business and economic cases accompanied by sample reports incorporating test results, its conclusions and the communication of such conclusions.

Prerequisite(s): MAT 212 and BUS 205

Recommendation: CIS 120. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Basic Excel knowledge is required before enrolling in this course. CIS 120 meets this requirement.

BUS 296 Independent Study in Business**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Independent study projects or special interest areas in business under the supervision of a faculty member.

Prerequisite(s): BUS 100.**Information:** May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Chemistry

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CHM 080 Preparation for General Chemistry**1 cr. hrs. 1 periods (1 lec.)**

Fundamentals of chemistry. Includes nomenclature, atomic structure, bonding, chemical equations, moles, stoichiometry, the periodic table, conversions, problem solving techniques and study skills.

Prerequisite(s): Within the last three years: MAT 095 or 097 with a grade of C or better, or required score on the mathematics placement test.**Information:** Designed to prepare students for CHM 151IN. NOTE: Please be aware that this course is not eligible for the calculation of Federal Student Aid.**CHM 121IN Chemistry and Society****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Basic chemistry and its relationship to everyday experiences. Includes classification and structure of matter; radioactivity; compound formation from elements; and electron transfer. Also includes acids, bases, salts, the liquid state, the gas state, and special topics.

Information: Designed for non-science majors, education majors, and the general public.**Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.**CHM 130IN Fundamental Chemistry****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Inorganic Chemistry as a basis for the study of some life processes. Includes the classification, structure and general chemical behavior of inorganic matter.

Prerequisite(s): With a grade of C or better: MAT 092 or required score on mathematics placement test. NOTE: Students receiving a grade of C in MAT 092 will be required to register for the CHM 130RC course concurrently. For students receiving a grade of B or higher in MAT 092 or placing into MAT 097 or higher in the Math placement, the CHM 130RC course is optional but highly recommended.**Information:** Adapted to the needs of students in allied health programs.**Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.**CHM 130RC Fundamental Chemistry Recitation****1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 130IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Inorganic Chemistry as a basis for the study of some life processes. Includes the classification, structure and general chemical behavior of inorganic matter.

Corequisite(s): CHM 130IN**Information:** Pass-fail only. Students receiving a grade of C in MAT 092 will be required to register for CHM 130RC concurrently. For students receiving a grade of B or higher in MAT 092 or placing into MAT 097 or higher on the MAT placement, the CHM 130RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.**CHM 140IN Fundamental Organic and Biochemistry****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CHM 130IN. Organic chemistry as the basis for the study of some important life processes. Includes the classification, structure, and general chemical behavior of organic and biochemical systems.

Prerequisite(s): A grade of C or better in CHM 130IN. NOTE: Students receiving a grade of C in CHM 130IN will be required to register for the CHM 140RC course concurrently; for students receiving a grade of B or higher in CHM 130IN, the CHM 140RC course is optional but highly recommended.**Information:** Adapted to the needs of students in nursing and other health professions.**Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.

CHM 140RC Fundamental Organic and Biochemistry Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 140IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Organic chemistry as the basis for the study of some important life processes. Includes the classification, structure, and general chemical behavior of organic and biochemical systems.

Corequisite(s):CHM 140IN**Information:** Pass-Fail only. Students receiving a grade of C in CHM 130IN will be required to enroll in CHM 140RC. Students with a grade of B or higher in CHM 130IN, the CHM 140RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.**CHM 151IN General Chemistry I****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the foundations of chemistry for upper-level sciences and engineering. Includes atomic structure, chemical bonding, reaction stoichiometry, behavior of gases, and reactions in solutions. Also includes an introduction to thermochemistry.

Prerequisite(s): CHM 080 with a grade of C or better or minimum score on CHM Assessment Test; and MAT 151 or 188 or higher with a grade of C or better, or required score on the mathematics placement test. NOTE: Students receiving a grade of C in CHM 080 or the CHM placement test will be required to register for the CHM 151RC course concurrently. For students receiving a B or higher in CHM 080 or the CHM placement test, CHM 151RC is optional but highly recommended**Information:** The Chemistry Assessment Test can be repeated once. Students must wait one week before being permitted to retake. Students not passing the assessment after the second attempt must pass CHM 080 with a grade of C or better to enroll in CHM 151IN. MAT 220 is required for most Science Pathways.**Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.**CHM 151RC General Chemistry I Recitation****1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 151IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more discourse on classroom concepts and theory. Introduction to the foundations of chemistry for upper-level sciences and engineering. Includes atomic structure, chemical bonding, reaction stoichiometry, behavior of gases, and reactions in solutions. Also includes an introduction to thermochemistry.

Prerequisite(s): With a grade of C or better: Chemistry Assessment Test or CHM 080; and MAT 151 or 188 or higher, or required score on the mathematics placement test.**Corequisite(s):**CHM 151IN**Information:** Pass-fail only. Students receiving a grade of C on the Chemistry Assessment Test or in CHM 080 will be required to enroll in CHM 151RC. The assessment may be repeated once. Students must wait one week before being permitted to retake. Students not passing the assessment after the second attempt must pass CHM 080 with a C or better. Students with a grade of B or higher on the Chemistry Assessment Test or in CHM 080, the CHM 151RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.**CHM 152IN General Chemistry II****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CHM 151IN. Includes emphasis on certain chemical concepts such as chemical kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry.

Prerequisite(s): With a grade of C or better: CHM 151IN, and either MAT 151 or 189 or higher, or required score on the mathematics placement test. NOTE: Students receiving a grade of C in CHM 151IN will be required to register for the CHM 152RC course concurrently. For students receiving a grade of B or higher in CHM 151IN, the CHM 152RC course is optional but highly recommended.**Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.**CHM 152RC General Chemistry II Recitation****1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 152IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Includes emphasis on certain chemical concepts such as chemical kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry.

Corequisite(s):CHM 152IN**Information:** Pass-fail only. Students receiving a grade of C in CHM 151IN will be required to enroll in CHM 152RC. Students with a grade of B or higher in CHM 151IN, the CHM 152RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

CHM 195 Introduction to Research in Chemistry**4 cr. hrs. 4 periods (4 lec.)**

Introduction to the methods of research in chemistry. Includes scientific laboratory procedures, experimental design, scientific writing, scientific ethics, and current research in working laboratories.

Information: Consent of instructor is required before enrolling in this course.

CHM 196LB Independent Studies in Chemistry**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Laboratory projects varying with students' interests and reasons for enrolling.

CHM 235IN General Organic Chemistry I**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamentals of organic chemistry. Includes classification, occurrence, synthesis, analysis, Stereochemistry, and reaction mechanisms of important classes of organic compounds; namely alkanes, cycloalkanes, alkenes, alkynes, and alkyl halides. Also includes application of the organic chemistry concepts addressed, using a wide range of laboratory apparatus and procedures. Also focuses on laboratory safety skills and computer software applications related to chemistry.

Prerequisite(s): CHM 152IN with a grade of C or better. NOTE: Students receiving a grade of C in CHM 152IN will be required to register for the CHM 235RC course concurrently; for students receiving a grade of B or higher in CHM 152IN, the CHM 235RC course is optional but highly recommended.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S. **Gen Ed:** Meets AGEC - SCI; Meets CTE - M&S.

CHM 235RC General Organic Chemistry I Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 235IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Fundamentals of organic chemistry. Includes classification, occurrence, synthesis, analysis, Stereochemistry, and reaction mechanisms of important classes of organic compounds; namely alkanes, cycloalkanes, alkenes, alkynes, and alkyl halides. Also includes application of the organic chemistry concepts addressed.

Corequisite(s): CHM 235IN CHM 235IN.

Information: Pass-fail only. Students receiving a grade of C in CHM 152IN will be required to enroll in CHM 235RC. Students with a grade of B or higher in CHM 152IN, the CHM 235RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid. of study, it is not eligible for the calculation of Federal Student Aid.

CHM 236IN General Organic Chemistry II**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CHM 235IN. Includes remaining classes of organic compounds, specifically dienes, alcohols, ethers and epoxides, aldehydes, ketones, acids, acid derivatives, aromatics, and nitrogen containing compounds and an introduction to biomolecules and/or polymers. Also includes an emphasis on synthesis and use of chemical and instrumental methods as means of identification while using a wide range of laboratory apparatus and procedures. Also focuses on laboratory safety skills and computer software applications related to chemistry.

Prerequisite(s): CHM 235IN with a grade of C or better. NOTE: Students receiving a grade of C in CHM 235IN will be required to register for the CHM 236RC course concurrently; for students receiving a grade of B or higher in CHM 235IN, the CHM 236RC course is optional but highly recommended.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

CHM 236RC General Organic Chemistry II Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with CHM 236IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Includes remaining classes of organic compounds, specifically dienes, alcohols, ethers and epoxides, aldehydes, ketones, acids, acid derivatives, aromatics, and nitrogen containing compounds and an introduction to biomolecules and/or polymers. Also includes an emphasis on synthesis and use of chemical and instrumental methods as means of identification.

Corequisite(s): CHM 236IN CHM 236IN.

Information: Pass-fail only. Students receiving a grade of C in CHM 235IN will be required to enroll in CHM 236RC. Students with a grade of B or higher in CHM 235IN, the CHM 236RC course is optional. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid. if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

CHM 290 Chemistry Internship**1-4 cr. hrs. 1-4 periods (1-4 lec.)**

Internship and work experience in a science field or laboratory. Includes setting, achieving, and evaluating goals for hands-on learning experiences in sciences. Also includes development of skills and knowledge needed to work in a science field or laboratory.

Information: Consent of Internship instructor is required before enrolling in this course.

CHM 295LB Independent Research in Chemistry**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Experience in scientific laboratory research. Specific content to be determined by student and instructor.

Information: One semester of chemistry and consent of instructor is required before enrolling in this course. May be taken three times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Child Development Associate

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CDA 102 The Child's Total Learning Environment**1 cr. hrs. 1 periods (1 lec.)**

Analysis of the total learning environment for children birth through age 8. Includes establishing an educational learning environment, value of a child-centered learning environment, the indoor and outdoor environment, developmentally appropriate learning centers, and play materials. Also includes the teacher's role and responsibility within the learning environment, and utilizing the community as an integral part of the child's total learning environment.

Information: All CDA courses require college-level reading and writing.

CDA 103 Curriculum Planning and Schedule Development**1 cr. hrs. 1 periods (1 lec.)**

Strategies for the creation of lesson plans and schedules for use in the classroom. Includes preparation of group and individualized lesson plans and schedules based on children's abilities, planning as a cooperative effort, foundations of events and activities, balancing variety in the classroom, individual center's philosophy in the planning process, flexibility in planning, and assessment and evaluation.

Information: All CDA courses require college-level reading and writing.

CDA 112 Guidance Principles for Encouraging Self-Discipline**1 cr. hrs. 1 periods (1 lec.)**

Development of guidelines for using positive discipline techniques in the classroom. Includes role modeling, social development and appropriate actions, program influences on children's behaviors and relationships, rules and limits, and difference between discipline and punishment.

Information: All CDA courses require college-level reading and writing.

CDA 121 Techniques for Observing Children**1 cr. hrs. 1 periods (1 lec.)**

Development of techniques for observing, recording, and interpreting behavior in children. Includes purpose of observation, observation and collecting information, observation and assessment techniques, interpreting observations, individual documentation, observation-based curriculum planning, behavioral and developmental milestones, and sharing observations and assessments professionally.

Information: All CDA courses require college-level reading and writing.

CDA 126 Literature for Preschool Children**2 cr. hrs. 2 periods (2 lec.)**

Survey of materials and techniques for the selection and evaluation of children's literature. Includes the importance of literature for children, creating a developmentally appropriate environment for young readers, general categories of books, importance of pictures/illustrations and storytelling, reading aloud to children, creating a story with children and the teacher's role.

Information: All CDA courses require college-level reading and writing.

CDA 138 Building Parent and Classroom Connections**3 cr. hrs. 3 periods (3 lec.)**

Analysis of the specific attitudes, philosophies and practical techniques in building relationships with families for teachers. Includes families today, overview of family involvement, benefits of and barriers to teacher family partnerships, at the beginning with parents and children, informal communications with families, parent teacher conferences, home visits, families in the classroom, community involvement, working with families from diverse backgrounds and families in particular circumstances, resolving troublesome attitudes and behaviors, and parent involvement programs that work.

Information: All CDA courses require college-level reading and writing.

CDA 155 Understanding How Children Learn and Develop**1 cr. hrs. 1 periods (1 lec.)**

Exploration of the cognitive learning progression of children birth through age 8. Includes introduction of various theorists, ways children learn, and the family and community influences and support toward a child's learning and the teacher's role.

Information: All CDA courses require college-level reading and writing.

CDA 161 Principles of Social Competence**1 cr. hrs. 1 periods (1 lec.)**

Analysis of self-concept in children. Includes self concept/self-image, primary factors, uniqueness of each child, environment, accepting and expressing feelings appropriately, observation, expressing emotions, activities for expression of feelings, and exploration of feelings.

Information: All CDA courses require college-level reading and writing.

CDA 170 Ages and Stages of Young Children: Prenatal through Toddler**2 cr. hrs. 2 periods (2 lec.)**

Examination of the developmental stages pre-birth to age three years. Includes general principles and theories of development, biological and environmental factors, conception to birth, infant developmental, toddler developmental milestones, issues in infant care, and toddler care issues.

Information: All CDA courses require college-level reading and writing.

CDA 173 Ages and Stages of Young Children: The Preschool Years**1 cr. hrs. 1 periods (1 lec.)**

Examination of the developmental stages of preschool children ages 3 to 5 years. Includes general principles and theories of development, physical characteristics, pattern of motor skill development, cognitive development, socio-emotional development, developmental concerns and challenges and family involvement.

Information: All CDA courses require college-level reading and writing.

CDA 211 Small and Large Muscle Development**2 cr. hrs. 2 periods (2 lec.)**

Examination of small and large muscle development and its relationship to cognitive learning. Includes overview of small/large muscle development, specific sequence, orderly process, practice, characteristics of the large and small muscle, activities and environment to promote muscle development, supervision and guidance, and observation and assessment. Also includes a variety of spontaneous and planned activities.

Information: All CDA courses require college-level reading and writing.

CDA 222 Elements of Children's Culture**1 cr. hrs. 1 periods (1 lec.)**

Examination of the ways culture affects children's learning. Includes an overview of multiculturalism, cross-cultural competence, responsive learning environments, and family and community involvement.

Information: All CDA courses require college-level reading and writing.

CDA 271 Professionalism in Childcare**1 cr. hrs. 1 periods (1 lec.)**

Analysis of the history and ethics of early childhood professionals. Includes defining professionalism; examining the past, present and future; exploring professional values and ethics; continuing professional growth/education; and becoming an advocate for children and their families.

Information: All CDA courses require college-level reading and writing.

CDA 275 Transitions**1 cr. hrs. 1 periods (1 lec.)**

Examination of the nature of transitions in the classroom. Includes introduction to transitions, selection of transitional activities, and transitions as part of the curriculum.

Information: All CDA courses require college-level reading and writing.

Chinese

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CHI 101 Elementary Chinese (Mandarin) I

5 cr. hrs. 5 periods (5 lec.)

Introduction to the Mandarin Chinese language. Includes basic phonetic system of the Chinese language, basic Chinese grammar structures, reading simple texts, basic Chinese writing and Chinese culture. Also includes a foundation in listening, speaking, reading, writing, and cultural awareness.

Gen Ed: Meets AGEC - OTHER; Meets CTE A&H.

CHI 102 Elementary Chinese (Mandarin) II

5 cr. hrs. 5 periods (5 lec.)

Continuation of CHI 101. Includes additional phonetic system of Chinese language, additional selection of grammar structures, additional reading Chinese, additional writing Chinese, and additional Chinese culture. Also includes an additional level of listening, speaking, reading, writing, and cultural awareness.

Prerequisite(s): CHI 101.

Gen Ed: Meets AGEC - OTHER; Meets CTE A&H.

CHI 201 Intermediate Mandarin I

5 cr. hrs. 5 periods (5 lec.)

Continuation of CHI 102. Includes intermediate selection of grammar structures, oral and aural transactions, political, economic, and social vocabulary in readings and writings, intermediate literary works, and norms, values, and beliefs.

Prerequisite(s): CHI 102.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

Clinical Research Coordinator

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CRC 101 Foundations of Clinical Research

3 cr. hrs. 3 periods (3 lec.)

A comprehensive introduction to the clinical research process and practice. Includes history and evolution of clinical research, phases of clinical trials, protection of human subjects, clinical research team personnel and their roles, and the responsibilities of clinical research organizations. Also includes medical, clinical research, and standard pharmaceutical/pharmacological terms commonly used in clinical research; and issues of sensitivity, diversity, and ethics as applied to clinical research.

Information: Introductory class for program core.

CRC 102 Introduction to Research Data

3 cr. hrs. 3 periods (3 lec.)

Introduction to the organization and management of research data, and effective presentation of data in reports. Topics include database structures, data management systems, and quality assurance. Also includes data confidentiality and security; and preparation of case report forms.

Recommendation: Completion of CRC 101. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Upon completion, students will be able to organize, enter, and review clinical research data. Textbooks and materials are not required for this course.

CRC 110 Clinical Research Common Terminology

3 cr. hrs. 3 periods (3 lec.)

Study of common terminology used in clinical research profession in order to properly report adverse events in universally understood terminology. Includes research specific terminology and medical terminology used in order to collect a thorough medical history, during an Adverse Event report, and throughout a clinical trial. Also includes common and medical terminology used in clinical research and other health care professions. In addition, the Medical Dictionary for Regulatory Activities (MedDRA) and the Common Terminology Criteria for Adverse Events (CTCAE) will be explored.

Prerequisite(s): BIO 160IN or 201IH.

Information: BIO 201IN may be substituted for BIO 201IH to meet the prerequisite requirement.

CRC 201 Clinical Research Regulatory Compliance**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the Food and Drug Administration (FDA) regulatory process and regulatory requirements for clinical research. Includes an overview of the role and function of the FDA, the drug development process, preparation and maintenance of an Investigational New Drug (IND), regulatory documentation, safety reporting, and Good Clinical Practices (GCPs).

Recommendation: Completion or concurrent enrollment in CRC 101. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CRC 202 Investigational Product Development and Regulation**3 cr. hrs. 3 periods (3 lec.)**

Overview to Investigational Product development and regulations. Includes the legal and regulatory framework for drug and device safety, with a focus on the analysis of current industry and regulatory activities while applying the principles of pharmacovigilance. Pharmacovigilance is the science and activities related to the detection, monitoring, assessment, understanding, and prevention of adverse effects of medicines including vaccines and biological products.

Recommendation: Completion of CRC 201. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CRC 230 Introduction to Clinical Research Study Protocol**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the scientific development of research protocols and related regulatory requirements. Includes differentiations among research design types, rules for writing protocols, and ethical considerations relative to research protocols.

Prerequisite(s): CRC 101 or concurrent enrollment.

Recommendation: Completion of or concurrent enrollment in CRC 201. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CRC 240 Pharmacology for Clinical Trials**4 cr. hrs. 4 periods (4 lec.)**

Essential drug knowledge and facts and their application in clinical research. Includes common medical diagnoses and their related drug treatments (brand name and generic); what constitutes a drug; the effects and modes of action of drugs upon the body (pharmacodynamics); method and rate of excretion and duration of the effect of drugs (pharmacokinetics); drug side effects; drug-drug interactions; and how to find and interpret drug-related information from primary literature. Also includes an overview of the drug development process from bench through post-approval marketing.

Prerequisite(s): CRC 101.

CRC 250IN Clinical Research Site Coordination and Management**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the elements involved in implementing and managing a clinical trial from the perspective of the research site staff/team. Includes the identification and evaluation of sites and investigators, on-site budget management, and the coordination of subject participation.

Prerequisite(s): CRC 101, 201, and 230.

CRC 260IN Lab Skills and Professional Practice**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Clinical skills training to prepare for clinical research coordinator internship, with emphasis on applying clinical research project coordination concepts and practices in a simulated research setting. Includes research subject communication techniques, medical history review, adverse events, vital signs, EKG procedures, blood collection and specimen processing, storage and shipping. Also includes application of clinical research project coordination practices related to a protocol; research and medical terminology; recruitment, enrollment and retention practices; informed consent; detection of errors within study reports and casework; documentation of medications, adverse events and serious adverse events; review of study subject's file data for completeness and accuracy; and regulatory and legal mandates related to clinical trials.

Prerequisite(s): CRC 240 and 250IN.

CRC 270 Research Management for Sponsors and CRO's**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the elements involved in implementing, monitoring and managing a clinical study from the perspective of the Sponsor or Contract Research Organization (CRO). Includes overall project planning, development of study goals, preparation of budget and contracts, implementation of monitoring visits, and effective management of research sites.

Prerequisite(s): CRC 250IN.

CRC 291 Clinical Research Coordinator Internship**1-3 cr. hrs. 3-9 periods (3-9 lab)**

Supervised work experience in a clinical research setting. Includes emphasis on the observation and enhancement of professional and management skills team communication and interaction, and the application of research principles, procedures, protocols, and regulations in the workplace. Student will rotate through a variety of research sites agreed upon by the instructor and student.

Prerequisite(s): CRC 260IN.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CRC 296 Clinical Research Independent Study: Clinical Project**1-6 cr. hrs. 4-24 periods (4-24 lab)**

Students independently continue their development in Clinical Research under the mentorship of a faculty member. Content will be determined by instructor and student.

Information: Students must obtain lead faculty approval before enrolling in this course. Course content and performance objectives will be kept on file in the campus curriculum coordinator's program file.

Communication

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CMN 102 Introduction to Communication**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the function, basic concepts, and skills of oral communication in interpersonal and public address situations. Includes foundations of communication, perception of self and others, intercultural communication, interpersonal communication and relationships, public speaking, and group communication.

CMN 110 Public Speaking**3 cr. hrs. 3 periods (3 lec.)**

Study and training in public speaking that takes an audience-centered approach. Includes the responsibilities of the public speaker and the listener, managing nervousness and causes of public speaking anxiety, topic selection, audience analysis, organizing the speech, presenting the speech, and types of public speaking.

Gen Ed: Meets AGEC - OTHER and C; Meets CTE - OTHER and C.

CMN 120 Business and Professional Communication**3 cr. hrs. 3 periods (3 lec.)**

Study and training in organizational communication within a multicultural/global environment. Includes communication in a multicultural/global business environment, interpersonal communication skills in a culturally diverse workforce; researching, organizing, and delivering informative, instructional, and persuasive presentations; interviewing techniques, group process in business, and listening techniques.

Gen Ed: Meets AGEC - OTHER and C, G; Meets CTE - OTHER and C, G.

CMN 130 Small Group Communication**3 cr. hrs. 3 periods (3 lec.)**

Study and training in small group communication. Includes the nature and functions of small group communication; leadership, influence, and decision-making in small groups; principles of small group interactions, and designing and delivering small group presentations.

Gen Ed: Meets AGEC - OTHER; Meets CTE - OTHER.

CMN 140 Interpersonal Communication**3 cr. hrs. 3 periods (3 lec.)**

Introduction to interpersonal communication with an emphasis on the concepts and examples relevant to our daily lives. Includes foundations of interpersonal communication, messages, dynamics, and relationships in context.

CMN 200 Intercultural Communication**3 cr. hrs. 3 periods (3 lec.)**

The study of intercultural communication comparing cultures and communication styles with a focus on developing intercultural communication competence in interactions with culturally dissimilar people. Includes strategies for managing intercultural communication conflict; avoiding stereotypes and prejudice in intercultural encounters; for dismantling racism and discrimination. Also includes communication skills to achieve intercultural communication competence.

Prerequisite(s): CMN 102 or 110.

CMN 228 Research Methods in Communication**3 cr. hrs. 3 periods (3 lec.)**

An introduction to communication research methods. Includes how to plan and design studies, conduct studies using various methodologies, how information collected is analyzed, and how results of the research are interpreted in a meaningful manner.

Information: This course prepares communication majors to study, research and analyze communication issues. This course is designed for students with little or no familiarity with research methods.

Computer Aided Design/Drafting

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CAD 101 Computer-Aided Drafting**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Two-dimensional computer-aided drafting (CAD) concepts and techniques. Includes CAD methods, electronic file management, freehand sketching, visualization, dimensioning, and copy production.

Information: For individuals with no computer and/or drafting experience.

CAD 104 Integrated Circuit Layout Fundamentals**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles and concepts of integrated circuit layout using Cadence design software. Includes basic electronics, fundamentals of integrated circuits, circuit design, circuit floorplanning, electronic file management, schematic diagram, and physical layout overview.

Corequisite(s)

Recommendation: CAD 114, TEC 100. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CAD 114 Electronic Manufacturing Processes**2 cr. hrs. 2 periods (2 lec.)**

Principles and concepts of integrated circuit manufacturing processes. Includes integrated circuit device physics, semiconductor fabrication, failure mechanisms, resistors, capacitors, diodes, and metal-oxide semiconductor (MOS) transistors.

CAD 117 Print Reading with CAD for Manufacturing**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles and concepts of print reading, technical freehand sketching, and CAD drawing. Includes common print and manufacturing terms, print fundamentals and standards, freehand sketching, CAD applications, and print analysis. Also includes an introduction to SolidWorks solid modeling and detail drawing production.

CAD 127 Introduction to MicroStation**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to MicroStation basic concepts and techniques. Includes computer aided drafting procedure and methods in the areas of architectural and civil design, electronic file management, software drawing setup, 2D and 3D fundamental elements creation and manipulating elements, annotation, industry standards, scale, dimensioning, hard copy production, and final project.

CAD 142 Introduction to Parametric Modeling: SolidWorks**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Beginning level parametric modeling mechanical concepts, techniques, and problems using SolidWorks software. Includes parametric modeling, working drawings and assemblies.

CAD 151 Computer-Aided Drafting for Construction**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to principles of design. Uses software, such as SketchUp, to explore design at various scales. Includes an overview of modern design, culture creation, human perception, design investigation strategies, and elements and principles of design. Also includes a comprehensive review of 3D modeling methods and presentation techniques.

CAD 152 Technical Drafting**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Students will learn basic concepts, techniques, and applications for mechanical drafting. Includes mechanical design fundamentals and standards, advanced Computer-Aided Drafting (CAD) applications, documentation, hardware, tolerancing methods, Geometric Dimensioning and Tolerancing (GD&T), and hard copy techniques and procedures.

Prerequisite(s): CAD 142**CAD 153 Electro-Mechanical Design****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Electronic drafting fundamentals and standards, electronic component and schematic applications, and electronics concepts. Includes Computer-Aided Drafting (CAD) techniques, and file management procedures.

Prerequisite(s): CAD 101.

Information: Prerequisite may be taken concurrently for some CAD program pathways. See faculty for approval of prerequisite concurrent enrollment.

CAD 154 Integrated Circuit Layout Design I**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles and concepts of mixed signal integrated circuit layout using Cadence design software. Includes design process, circuit floorplanning, analog layout design, digital layout design, ESD (electro-static discharge) design and padding layout, device matching, DRC (design rule check) verification techniques, and LVS (layout versus schematic) verification techniques.

Prerequisite(s): CAD 104.**CAD 155 Residential Computer-Aided Design****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Residential Computer-Aided Design Beginning level Computer-Aided Design (CAD) of single family detached dwellings. Includes residential CAD skills, site, foundation, floor and roof framing, mechanical, plumbing, and electrical plans, building and wall sections, building elevations, and working drawing coordination.

Prerequisite(s): CAD 101.

Corequisite(s)

CAD 157 Introduction to Site Development and Design**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Overview of site planning and design. Includes introduction to site development, applications of CAD drafting, mapping, location and direction, legal descriptions and plot plans, contour lines, details and drawings, and Geographic Information Systems.

Prerequisite(s): CAD 101.

Information: Prerequisite may be taken concurrently for some CAD program pathways. See faculty for approval of prerequisite concurrent enrollment.

CAD 166 Introduction to Revit**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to Building Information Modeling (BIM) for architectural applications using Revit. Includes how to access tools, build a parametric model, reference levels and views, and produce drawing sheets. Create 3-dimensional elements (families) that contain variable characteristics and embed design intent. Extract, analyze, and modify model information by generating additional section views, rendered perspectives, and schedules.

Information: For individuals with no BIM experience.**CAD 172 Geometric Dimensioning and Tolerancing****3 cr. hrs. 3 periods (3 lec.)**

Establishing controls on sizes and allowances of mechanical parts. Includes definitions and rules, form tolerances, datums, orientation controls, location controls, runout, and profile.

Prerequisite(s): CAD 117 or 142.

Corequisite(s)

Information: Prerequisites may be waived if equivalent mechanical drawing experience is documented. See CAD instructor or advisor/counselor.

CAD 196 Independent Study in Computer-Aided Design: 100 Level**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent work at the 100 level on a special project not included in regular courses. The student is required to obtain a sponsoring CAD instructor and establish objectives, a procedural method, and a method of evaluation.

Prerequisite(s): CAD 101.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credits. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CAD 199 Co-op: Computer-Aided Drafting**1 cr. hrs. 1 periods (1 lec.)**

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to subject area). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience.

Corequisite(s): CAD 199WK

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CAD 199WK Co-op Work: Computer Aided Design**1-8 cr. hrs. 5-40 periods (5-40 lab)**

A supervised cooperative work program for students in related occupation area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.

Corequisite(s): CAD 199

Information: May be taken two times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CAD 203 Advanced Electro-Mechanical Design**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 153. Includes standards for packaging, fastener library, 3D sheet-metal enclosures, production drawing sheets, materials and fastening systems for enclosures, and hard copy techniques and procedures.

Prerequisite(s): CAD 153

Corequisite(s)

CAD 204 Integrated Circuit Layout Design II**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 154. Includes intermediate design process, intermediate circuit floorplanning, intermediate analog layout design, intermediate digital layout design, intermediate ESD (electro-static discharge) design and padding layout, intermediate device matching, intermediate DRC (design rule check) verification techniques, and intermediate LVS (layout versus schematic) verification techniques.

Prerequisite(s): CAD 154.

CAD 206 Commercial Design: Revit**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Computer-Aided Design (CAD) of commercial buildings using Revit. Includes commercial CAD skills, research, design, integrated 3D modeling, rendering, virtual building construction, detailing and documentation.

Prerequisite(s): CAD 166.

CAD 207 Land Development Design: Civil 3D**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Computer-Aided Design (CAD) specific to sites for construction of buildings, roads, and utilities at the intermediate level using Civil 3D. Includes intermediate civil drafting technology, intermediate surveying, intermediate location and direction, intermediate mapping, intermediate legal descriptions and plot plans, intermediate contour lines, intermediate profiles, intermediate road layout, intermediate earthwork, intermediate Geographic Information Systems (GIS).

Prerequisite(s): CAD 157.

CAD 222 Introduction to Parametric Modeling: Inventor**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Beginning level parametric modeling mechanical concepts, techniques, and problems using Inventor software. Includes parametric modeling, working drawings, assemblies, animation, and plotting techniques.

CAD 232 Advanced Parametric Modeling: Inventor**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 222. Includes advanced parametric modeling mechanical concepts, techniques, and problems using Inventor software. Also includes full assembly set, including detail drawings, sub-assemblies, and revision tracking.

Prerequisite(s): CAD 172 and 222.

CAD 242 Advanced Parametric Modeling: SolidWorks**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 142 at the advanced level. Advanced parametric modeling and complex geometry creation techniques, advanced drawing and detailing, drawing revision, reverse engineering methods, advanced model diagnostics, and model data exchange using SolidWorks. course includes a final design project.

Prerequisite(s): CAD 142.

CAD 252 Introduction to Parametric Modeling: Creo**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to parametric modeling with Creo. Includes parametric modeling techniques.

Prerequisite(s): CAD 117.

CAD 254 Integrated Circuit Layout Design III**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 204. Includes advanced design process, advanced circuit floorplanning, advanced analog layout design, advanced digital layout design, advanced ESD (electro-static discharge) design and padding layout, advanced device matching, advanced DRC (design rule check) verification techniques, and advanced LVS (layout versus schematic) verification techniques.

Prerequisite(s): CAD 204.

CAD 256 Advanced Commercial Design: Revit**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 206 at the advanced level using Revit. Includes advanced level commercial CAD skills, research, design, integrated 3D modeling, rendering, virtual building construction, detailing, and documentation.

Prerequisite(s): CAD 206.

CAD 257 Advanced Land Development Design: Civil 3D**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of CAD 207 at the advanced level using Civil 3D. Includes advanced civil design technology, advanced surveying, advanced location and direction, advanced mapping, advanced legal descriptions and plot plans, advanced contour lines, advanced profiles, advanced road layout, advanced earthwork, and advanced Geographic Information Systems (GIS).

Prerequisite(s): CAD 207.

CAD 265 Design for Sustainability**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Computer-Aided Design (CAD) applications specific to site and building sustainability. Includes green building fundamentals, sustainable design principles, parametric modeling for analysis, and a building design proposal.

Prerequisite(s): CAD 166.

CAD 266 Mechanical, Electrical, Plumbing Drafting & Design:Revit MEP**4 cr. hrs. 6 periods (3 lec., 3 lab)**

3D modeling of commercial mechanical, electrical, and plumbing systems. Includes integration with architectural and structural systems, and production of construction documents.

Prerequisite(s): CAD 206.

CAD 270 Integrated Mechanical/Electro-Mechanical Design**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Computer-aided design project-based learning with relevant design-rule study in preparation for project design which includes planning for prototype design, hands-on fabrication, assembly, testing, and final report assessment.

Prerequisite(s): CAD 242.

CAD 280 Computer-Aided Design Portfolio**1 cr. hrs. 1 periods (1 lec.)**

Development of materials for employment. Includes portfolio contents, resume, cover letter, practice interview, portfolio, and presentation.

Prerequisite(s): CAD 142 or 204 or 206 or 207 or 222 or 252.

CAD 282 Advanced Parametric Modeling: Creo**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Advanced parametric modeling using Creo. Includes modeling advanced-level assemblies, creating detail drawings, creating assembly drawings, and project-based learning. Also includes hard copy techniques and procedures.

Prerequisite(s): CAD 252.

CAD 296 Independent Study in Computer-Aided Design: 200-Level**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent work at the 200-level on a special project not included in regular courses. The student is required to obtain a sponsoring CAD instructor, and establish objectives, a procedural method, and a method of evaluation.

Prerequisite(s): CAD 101.

Information: Consent of instructor is required before enrolling in this course. *Information:* May be taken two times for a maximum of eight credits. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Computer Information Systems

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CIS 103 Microsoft Windows Operating System Professional Admin**3 cr. hrs. 3 periods (3 lec.)**

Fundamental skills necessary to perform day-to-day administration tasks in a Microsoft Windows operating system. Includes windows network administration, windows operating system, user and group accounts, network resource security, print server administration, resource and event audits, and resource monitoring.

Information: Preparation for Microsoft certification examination.

CIS 104 Computer Fundamentals**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to computer information systems. Includes hardware, system software, networks, and threats posed by malicious software and web sites. Also includes the social and economic effects of information, using the Internet to do research, and productivity application software.

Recommendation: Completion of CSA 089 or basic computer and keyboard skills, completion of REA 091 or satisfactory score on the reading assessment test before enrolling in this course.

Information: Same as CSA 104.

Gen Ed: Meets CTE - OTHER.

CIS 119 Network Essentials**3 cr. hrs. 3 periods (3 lec.)**

Comprehensive introduction to computer networks and data communications. Includes computer networks and services, transmission media and connection, network models, popular protocol suites, other network issues, and network operating systems.

Recommendation: Completion of CIS 103 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 120 Computer Applications for Business**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to computer information systems and applications with an emphasis on Microsoft applications, especially Microsoft Excel. Students will develop an awareness of the critical thinking, quantitative analysis and qualitative assessment skills that serve as the foundation for the effective and ethical use of information as part of an informed business or personal decision.

Prerequisite(s): Within the last three years: C or better in MAT 092 or satisfactory score on the mathematics assessment exam.

Gen Ed: Meets AGEC - OTHER; Meets CTE - OTHER.

CIS 121 Web Publishing**3 cr. hrs. 3 periods (3 lec.)**

Introduction to website design using the most current versions of Hypertext Markup Language (HTML), JavaScript and Cascading Style Sheet (CSS). Includes PHP programming language, database access, JQuery, asynchronous JavaScript and XML (AJAX), web forms, HTML standards, web design, sessions and cookies.

CIS 129 Programming and Problem Solving I**4 cr. hrs. 4 periods (4 lec.)**

Introduction to personal and business computer systems. Includes components of a computer system; advantages and disadvantages of programming languages; traditional languages, native code and object-oriented concepts; source code versus executable code; and data structures and data representation. Also includes language statements; expressions components; control structures; problem-solving techniques; program test data, debugging and termination; and solving simple problems and creating programs using C, Python, or Java.

Prerequisite(s): MAT 095 or 097 or concurrent enrollment, through Module 35 in MAT 089A or 089B, or placement into MAT 151.

CIS 131 Programming and Problem Solving II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of CIS 129. Includes data structures and data representation, complex problem solving, procedural abstraction, and complex arrays with structured elements. Also includes object oriented programming, exception handling, file input and output, debugging, and testing.

Prerequisite(s): CIS 129.

Information: Programming assignments will use the C# or Java language.

CIS 132 Introduction to Computer Forensics**3 cr. hrs. 3 periods (3 lec.)**

Introduction to computer forensics which focuses on methods of detection and prevention of computer crime. Includes multidisciplinary nature of computer forensics; professional opportunities; computer investigations; operating systems introduction; the investigator's office and laboratory; forensic tools; and digital evidence controls. Also includes processing crime and incident scenes; data acquisition; computing forensic analysis; e-mail investigations; recovering image files; investigative report writing; and expert witness testimony.

Recommendation: Basic knowledge of computers and how to download and install software is recommended before enrolling in this course.

CIS 133 Fundamentals of Personal Computer Security**3 cr. hrs. 3 periods (3 lec.)**

Introduction to Personal Computer (PC) security and how to protect from outside threats. Includes an overview of cyber crime and security issues; networks and the Internet; assessing a personal computer system; denial of service attacks; malware; basics of securing a PC system; and data encryption. Also includes Internet fraud and security; examples of espionage in cyberspace; cyber detective work; and computer security hardware and software.

Recommendation: Completion of CIS/CSA 104 and familiarity with the Internet are recommended before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 136 Computer Hardware Components**3 cr. hrs. 3 periods (3 lec.)**

An overview of the primary components of common computer systems. Includes systems components, systems upgrades, printer selection, installation and maintenance, disk drive selection, additional input/output devices, selecting, configuring and customizing a system, and other computer topics.

CIS 137 Introduction to the UNIX Operating System**3 cr. hrs. 3 periods (3 lec.)**

Principles, tools, and history of the UNIX and Linux operating systems. Includes user utilities and some option switches, file structure and file names, regular expressions and extended regular expressions, shells, text editing, networking, and UNIX and Linux system administration.

Recommendation: Completion of CIS 120 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 141 Introduction to VB.NET**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the Visual Basic.NET programming language. Includes Microsoft .NET, .NET framework, common language runtime, getting started with Visual Basic.NET (VB.NET), and object-oriented programming. Also includes user interface programming, VB.NET and the .NET framework, and using ADO.NET in VB.NET

Prerequisite(s): CIS 129.

CIS 142 Introduction to C#**3 cr. hrs. 3 periods (3 lec.)**

Introduction to Microsoft's .NET Programming Language C. Includes introduction and simple compilation and execution of programs from the Visual Studio IDE; data types and declarations; using methods; creating classes and objects; selection and repetition; and creating and using arrays. Also includes inheritance; exception handling; GUI objects and controls from the Visual Studio IDE; and handling events.

Prerequisite(s): CIS 129.

Recommendation: Completion of CIS/CSA 104, have prior programming experience, or consent of instructor before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 162 Database Design and Development**3 cr. hrs. 3 periods (3 lec.)**

Introduction to database concepts and terminology. Includes file systems and databases, the relational database model, entity relationship modeling, normalization, and database design.

Corequisite(s)

CIS 170 CISCO I: Networking Fundamentals**4 cr. hrs. 4 periods (4 lec.)**

Introduction to the fundamentals of networking. Includes network concepts; the Open Systems Interconnection (OSI) model; binary numbering system; network architecture; Local Area Network (LAN) design and installation; and Cisco troubleshooting procedures. Also includes preparation for Cisco certification examination.

Recommendation: Consult instructor before enrolling in this course.

CIS 171 CISCO II: Networking Router Technologies**4 cr. hrs. 4 periods (4 lec.)**

Continuation of CIS 170. Introduction to the fundamentals of networking router technologies. Includes networking concepts; Open Systems Interconnection (OSI) model; Local Area Network (LAN) technologies; routing protocols; router configuration files; and Cisco troubleshooting procedures. Also includes preparation for the Cisco certification examination.

Prerequisite(s): CIS 170.

Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.

CIS 172 CISCO III: Advanced Routing and Switching**4 cr. hrs. 4 periods (4 lec.)**

Continuation of CIS 171. Development of skills to configure advanced routing protocols. Includes Local Area Network (LAN) switching; Virtual LAN (VLAN); LAN design; routing protocols; access lists; and Novell Internetwork Packet Exchange (IPX) protocol. Also includes preparation for the Cisco certification examination.

Prerequisite(s): CIS 171.

Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.

CIS 173 CISCO IV: Project Based Learning**4 cr. hrs. 4 periods (4 lec.)**

Continuation of CIS 172. Design and configuration of advanced Wide Area Network (WAN) projects using Cisco IOS command set. Includes WAN design; Point-to-Point protocol (PPP); Integrated Services Digital Network (ISDN); and frame relay. Also includes preparation for Cisco certification examination.

Prerequisite(s): CIS 172.

Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.

CIS 182 Introduction to ANSI SQL**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the American National Standards Institute (ANSI) Structured Query Language (SQL). Includes relational databases; SQL basics and nomenclature; simple queries, search conditions, and sorting; single table query processing and unions; simple and multi-table joins; summary queries using columns, group queries, and subqueries; and query expressions. Also includes adding, deleting, and modifying data from the database; referential integrity and constraints; creating databases; creating, removing, and modifying tables; and defining constraints.

Prerequisite(s): CIS 162.

Corequisite(s)

Information: CIS 162 may be waived with consent of instructor.

CIS 185 Introduction to Python**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the Python programming language. Includes using a text editor or the built-in Python IDE, IDLE, to develop programs, language syntax, dynamically typed variables, numeric operations, strings, selection control statements, repetition control statements, functions, classes, lists, dictionaries, file I/O, exception handling.

Prerequisite(s): CIS 129.

CIS 199 Introductory Co-op: Computer Information Systems**1 cr. hrs. 1 periods (1 lec.)**

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to subject area). Includes communication skills, time and energy management, stress and its management, careers: information and its uses, job market, principles, theories, and practices in the career field, and problems in the work situation.

Corequisite(s): CIS 199WK

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 199WK Introductory Co-op Work: Computer Information Systems**1-8 cr. hrs. 5-40 periods (5-40 lab)**

A supervised cooperative work program for students in related occupation area. Teacher-coordinators work with students and their supervisor. Variable credit is available by special arrangement.

Corequisite(s): CIS 199

Information: May be taken two times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 216 Introduction to Wireshark and Network Analysis**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to network analysis with Wireshark and other tools. Includes key Wireshark elements to analyze and identify TCP/IP traffic using capture, display, color filtering, profiles, graphing, and more. Includes the exploration of the basics for analyzing and defining information as provided by network monitoring and intrusion detection.

Prerequisite(s): CIS 119 or 170.

Information: The prerequisite(s) may be waived with consent of instructor.

CIS 218 Introduction to Voice over IP (VoIP)**4 cr. hrs. 4 periods (4 lec.)**

Introduction to the concepts of Voice over Internet Protocol (VoIP) from the history to expected future uses in the workplace and home. Includes an overview, digital voice fundamentals, standards, how an Internet Protocol (IP) phone call works, protocols and structure, relationship to the Open Standards Interconnection (OSI) model, gateways, quality of service, and router concerns.

Recommendation: Completion of CIS 119 or have networking experience before enrolling in this course. If any recommended course is taken, see a Financial Aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 219 Introduction to Virtual Computing**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to managing a cloud virtualized data center. Includes virtual machine deployment, management, monitoring, and automation. Also includes working with virtual networks, implementing disaster recovery and high availability, virtual security, and performance optimization.

Prerequisite(s): CIS 119 or 170.

Information: Students will have the opportunity to obtain vendor specific badges.

CIS 221 Deploying and Managing Windows Servers**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Windows server administration. Includes the core concepts and technologies to administer Windows server environments. Also includes basics of installation and configuration, storage, network protocols, server roles, Active Directory Domain Services (AD DS), Group Policy, server security, network security, monitoring server performance, and maintaining a Windows Server.

Prerequisite(s): CIS 103.

Information: This course provides helpful information and skills in preparation for the Windows Server Administration Fundamentals exam (98-365).

CIS 222 Implementing Windows Server Network Infrastructure**3 cr. hrs. 3 periods (3 lec.)**

Knowledge and skills to install, configure, maintain, and support a Microsoft Windows network infrastructure. Includes Dynamic Host Configuration Protocol (DHCP), Domain Name System (DNS), Windows Internet Name Service (WINS), traffic security, remote access, network router, remote installation, connectivity with other operating systems, and Web server.

Prerequisite(s): CIS 221*Information:* Preparation for Microsoft certification examination.**CIS 223 Implementing Windows Directory Services****3 cr. hrs. 3 periods (3 lec.)**

Knowledge and skills to install, configure, and administer Microsoft Windows Active Directory services. Includes active directory structure, active Directory services, domain name system (DNS), group policy implementation, user accounts, software development, group policy security, and administration of active directory objects.

Prerequisite(s): CIS 221.**CIS 225 Linux (UNIX) System and Network Administration****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Skills needed to extend, automate, and better secure an existing Linux deployment. Includes advanced file-system management capabilities, security controls, and firewall configuration. Also includes system optimization techniques improved storage management.

Prerequisite(s): CIS 137.*Information:* This course provides helpful information and skills in preparation for the Red Hat RHCSA certification examination.**CIS 226 Advanced Linux Networking****3 cr. hrs. 5 periods (3 lec., 2 lab)**

Advanced concepts in Linux and UNIX networking. Includes background review, basic Linux installation, Network File System (NFS) configuration, Network Information System (NIS) configuration, squid proxy, firewalls, and Lightweight Directory Access Protocol (LDAP).

Prerequisite(s): CIS 225.**CIS 227 Cyber Law and Ethics****3 cr. hrs. 3 periods (3 lec.)**

Basic understanding of current cyber security laws and the ethical principles involved. Includes describing and evaluating the impact of various laws and regulations in an industry or business. Also includes the importance of policies, procedures, guidelines, and information classification; risk identification; evaluation and mitigation; and the role of compliance.

Prerequisite(s): WRT 101, 101S, or 107.**CIS 228 Fundamentals of Network Security****4 cr. hrs. 4 periods (4 lec.)**

Introduction and general overview of security measures for computer networks. Includes authentication methods and techniques; attacks and malicious code; remote access concepts; email and web security; directory and file transfer services; and wireless protocols and security. Also includes hardware devices; topologies and security; methods of intrusion detection; establishing security baselines; introduction to cryptography; disaster recovery policies and procedures; and forensics, risk management, and auditing measures.

Recommendation: It is recommended that students complete CIS 119 or obtain consent of instructor prior to enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.*Information:* This course prepares students to take the CompTIA Security Exam.**CIS 229 Protecting Your PC and Network: CounterMeasures to Network****3 cr. hrs. 3 periods (3 lec.)**

Management of security for networking security professionals. Includes an overview of risk assessment and risk management principles, the CIS (confidentiality, integrity and availability) Triad, security management and policies, access controls, software development security, business continuity, and disaster recovery planning. Also includes an introduction to cryptology, legal aspects of computer crime, telecommunications, and network security.

Recommendation: Completion of CIS 119 or 170, and 228 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.*Information:* This course corresponds to the CISSP Certification (Certified Information Security Specialist Profession), but is not intended as a complete preparation for the CISSP Exam.

CIS 234 Project Management**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Required skills necessary to manage small-to-medium size IT projects. Includes the knowledge and skills required to manage the project lifecycle, ensure appropriate communication, manage resources, manage stakeholders, and maintain project documentation.

Information: This course provides helpful information and skills in preparation for the CompTIA Project certification examination.

CIS 235 Advanced Topics in Linux/Unix Security**3 cr. hrs. 3 periods (3 lec.)**

Overview for intermediate users of Linux and Linux administrators focusing on security issues. Includes background review, discovering network vulnerabilities, vulnerability mitigation, management awareness, intrusion detection, data gathering, and WiFi.

Prerequisite(s): CIS 225.

CIS 241 Advanced Visual Basic.NET Programming**4 cr. hrs. 4 periods (4 lec.)**

Advanced course in Visual Basic.NET programming with special emphasis on the new NET Framework and how it is used to create distributed applications. Includes review of VB.NET basics, basic Web programming, server-side Web programming with VB.NET, accessing data with VB.NET, and introduction and advanced VB.NET applications.

Prerequisite(s): CIS 141.

CIS 244 Securing Windows Server**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Identify security issues through use of auditing and the Advanced Threat Analysis feature in Windows Server. Includes mitigation of malware threats, securing the virtualization platform, and use of deployment options such as Nano server and containers to enhance security. Also includes protecting access to files by using encryption and dynamic access control to enhance security.

Prerequisite(s): CIS 221.

Information: Content for this course is based on Microsoft Securing Server 2016 (Exam 70-744).

CIS 245 Cyber Analytics, Detection, and Response**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Knowledge and skills required to configure and use threat detection and monitoring tools, data analysis, vulnerability identification, and threats identification.

Prerequisite(s): CIS 225.

Information: This course provides helpful information and skills in preparation for the CompTIA Project certification examination.

CIS 247 Ethical Hacking**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Skills necessary to plan and scope an assessment, understand legal and compliance requirements, perform vulnerability scanning and penetration testing, analyze data, and effectively report and communicate results.

Information: This course provides helpful information and skills in preparation for the CompTIA PenTest certification examination.

CIS 250 Introduction to Assembly Language**3 cr. hrs. 3 periods (3 lec.)**

Beginning assembly language programming. Includes number systems, machine architecture, program design, the assembler, the stack, array processing and indexing, and sorting. Also includes program debugging and testing, performance issues, program profiling, and programmer productivity issues.

Prerequisite(s): CIS 131.

Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.

CIS 265 The C Programming Language**3 cr. hrs. 3 periods (3 lec.)**

Principles and syntax of ANSI Standard C and many of the common library functions. Includes writing C programs in portable code to facilitate systems programming concepts.

Prerequisite(s): CIS 131.

Corequisite(s)

Recommendation: CIS 250. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 269 Data Structures**4 cr. hrs. 4 periods (4 lec.)**

Advanced topics in computer science and programming in C> Includes software engineering concepts and theory, memory management, inheritance, overloading, abstract classes, review of C< stacks, queues, recursion, and dynamic abstract data structures. Also includes source control, templates, hash tables, sort and search algorithms, file handling and streams, trees, graphs and networks.

Prerequisite(s): CIS 131 and 278.

CIS 276 Mobile App Programming: Android I**3 cr. hrs. 3 periods (3 lec.)**

Topics in computer science and programming in Java specific to Mobile App Programming on Androids. Includes software engineering concepts and theory, Graphical User Interface (GUI) concepts, memory management, inheritance, and exceptions. Also includes eXtensible Markup Language (XML), emulators (Android Virtual Devices), installing, debugging, and an introduction to the Android database system (SQLite).

Prerequisite(s): CIS 131.

CIS 278 C++ and Object-Oriented Programming**4 cr. hrs. 4 periods (4 lec.)**

Concepts and implementation of object-oriented programming and design using C++ Includes the language syntax of C++ applications using C++ objects to solve information systems problems, and class libraries created for reuse and inheritance.

CIS 279 Java Programming**4 cr. hrs. 4 periods (4 lec.)**

Introduction to the Java programming language. Includes review of fundamentals; objects, classes, and methods; extending classes and overriding methods; text input and output to console; and handling events. Also includes working with GUI components and database access.

Prerequisite(s): CIS 131.

CIS 280 Systems Analysis and Design: Concepts and Tools**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Concepts of systems analysis and design for all phases of the systems development life cycle. Includes problem identification, project initiation and planning, analysis, logical design, physical design, implementation and testing, and operations and maintenance. Also includes specific tools used by systems analysts, introduction and use of CASE (computer-aided software engineering) tools, and project management software.

Prerequisite(s): CIS 131 or 162.

CIS 281 Systems Analysis and Design: Applications**3 cr. hrs. 3 periods (3 lec.)**

Systems analysis concepts applied to specific software projects. Includes completing a software project from beginning to end, from problem identification to project implementation, using current methodologies and appropriate software development tools.

Prerequisite(s): CIS 280.

CIS 283 Advanced Python**4 cr. hrs. 4 periods (4 lec.)**

Advanced features of the Python programming language. Includes object-oriented programming, database access, GUI development with Tkinter, and web applications.

Prerequisite(s): CIS 185.

CIS 284 Cybersecurity Capstone**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Capstone experience for the CyberSecurity Associate of Applied Science. Provides an opportunity to reflect on and integrate the knowledge gained from previous courses into a final hands-on project.

Information: Course activities may take place in a simulated work setting.

CIS 288 Fundamentals of Cybersecurity**4 cr. hrs. 4 periods (4 lec.)**

Introduction to cyber security policy, doctrine, and operational constraints. Includes a broad survey of networking principles, cybersecurity concepts, tools, technologies, and best practices. Also includes hands-on activities to enhance familiarity with networking concepts and practice cybersecurity techniques and procedures.

Information: This course is designed to meet the University of Arizona South CYBV 301 requirement and is preparatory coursework for the UA South Cyber Operations program. Please see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 299 Advanced Co-op: Computer Information Systems**1 cr. hrs. 1 periods (1 lec.)**

A supervised cooperative work program for students in related occupation area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.

Corequisite(s):CIS 299WK

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CIS 299WK Adv Co-op Work: Comp Info Sys**1-8 cr. hrs. 5-40 periods (5-40 lab)**

Advanced Co-op Work: Computer Information Systems Introduction to Cooperative Education for second-year students (instruction which provides for success in securing and retaining a training job related to subject area). Includes communication skills, time and energy management, stress and its management, careers: information and its uses, job market, principles, theories, and practices in the career field, and problems in the work situation.

Corequisite(s):CIS 299

Information: May be taken two times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Computer Software Applications

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CSA 089 Beginning Computer Skills**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Beginning approach to operating a computer with a focus on basic computer skills and computer terminology. Includes Windows basics, Internet basics, fundamentals of Pima Community College web site, D2L, and MyPima, email basics, and basic word processing skills.

CSA 100 Computer Literacy**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Overview of computer applications and functions. Includes components of a computer system, spreadsheet, database, and word processing use within a workplace. Also includes computer networks for communication and information.

Recommendation: Completion of CSA 089 or basic computer and keyboard skills, completion of REA 091 or satisfactory score on the reading assessment test before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: CSA 100 is a one credit version of CIS/CSA 104.

CSA 104 Computer Fundamentals**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to computer information systems. Includes hardware, system software, networks, and threats posed by malicious software and web sites. Also includes the social and economic effects of information, using the Internet to do research, and productivity application software.

Recommendation: Completion of CSA 089 or basic computer and keyboard skills, completion of REA 091 or satisfactory score on the reading assessment test before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as CIS 104.

Gen Ed: Meets AGEC - OTHER; Meets CTE - OTHER.

CSA 110 Spreadsheets: Microsoft Excel**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamentals of spreadsheet applications using Microsoft Excel. Includes spreadsheet concepts, formulas and functions, formatting worksheets and cells, working with charts and graphics. Also includes Excel lists, managing multiple worksheets and workbooks, collaborating on a workbook, developing an Excel application, data tables and Scenario management, using Solver, importing data, and advanced functions and filtering.

Prerequisite(s): MAT 086 with a C or better or MAT 089A through Module 22 or required score on the Mathematics assessment test.

Recommendation: Completion of CSA 089 or basic computer skills, completion of WRT 101, REA 091 or required score on the assessment test before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite may be waived with consent of instructor.

CSA 120 Word Processing: Word**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Word processing techniques using Microsoft Word create, compare, and manage a range of documents. Includes application of templates, themes, styles, mail merge, web pages, macros, tables, forms, cross references, and indexes.

Recommendation: CSA 089 or basic computer skills, completion of REA 091 or satisfactory score on the reading assessment test. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CSA 130 PowerPoint**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamentals of Microsoft PowerPoint presentation software. Includes introduction to PowerPoint, beginning a presentation, templates and wizards, color scheme, drawing tools, clip art, presentation in outline view, toolbars, organization charts, graphs, advanced text and graphics, templates and the slide master, slide shows, output and presentation options, animation, video, sound, creating action buttons, connecting to the Internet, and running a slide show.

Recommendation: Basic computer skills, completion of REA 091 or equivalent score on the reading assessment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CSA 170 Database: Access**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Techniques for using Microsoft Access. Includes an overview of Microsoft Access, creating tables, working with tables, creating and using select queries, creating and using forms, creating and using reports, creating a report that contains totals, principles of table design and relationships, table design techniques, designing select queries, customizing form designs, working with data access pages, customizing reports, parameter and action queries, query joins and crosstab queries, using advanced form techniques, creating basic macros to automate forms, using macros to provide user interaction and automate tasks, using advanced report techniques, and Access, and the Internet.

Recommendation: Completion of CSA 089 or basic computer skills, completion of REA 091 or required score on the Reading assessment test before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CSA 182 Microsoft Windows: Current Version**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Overview of the Microsoft Windows operating system. Includes introduction to Windows, active desktop, multitasking, Windows help features, Windows Explorer, file management, Windows accessories, exchanging data between programs, print management, control panel, customizing Windows, and networking with Windows.

Recommendation: Completion of CSA 089 or basic computer skills, completion of REA 091 or required score on the Reading assessment test before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Crime Scene Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CSM 100 Intro to Photo Equip & Proc for Crime Scene Investigations**1 cr. hrs. 1 periods (1 lec.)**

Focus on developing skills in photographing a crime scene. Includes processing black and white films and paper. Also includes tools and equipment, taking basic crime scene photographs, and chemical processes used in processing crime scene photographs.

CSM 101 Criminalistics**2 cr. hrs. 2 periods (2 lec.)**

Focuses on awareness and identification of both physical and biological evidence associated with crime scenes, with an emphasis on scientific analysis. Includes discussion on fingerprints, ballistics, DNA and blood evidence, hair and fibers, tool marks, bite marks, glass fragments, handwriting analysis, the scientific technology behind the investigative process, safety issues, and the future of criminalistics.

CSM 102 Crime Scene Photography**1 cr. hrs. 1 periods (1 lec.)**

Focuses on the specific skills needed to photograph various types of crime scene situations. Includes 1:1 photography, trace evidence, proper use of photographic equipment for crime scene investigations, and photographing post mortem injuries.

Prerequisite(s): CSM 100.

CSM 103 Latent Processing**1 cr. hrs. 1 periods (1 lec.)**

Techniques involved in developing latent fingerprints. Includes physical characteristics, types of fingerprints, principles of fingerprinting, fingerprint collection, fingerprint surfaces, and the photography of latent prints.

CSM 104 Fingerprint Identification**3 cr. hrs. 3 periods (3 lec.)**

Provides in-depth study and analysis of fingerprints and their comparative value. Includes fingerprinting history, basic pattern types, identification standards and protocols, fingerprint pattern interpretations, and classification systems.

CSM 105 Blood Pattern Documentation**.5 cr. hrs. .5 periods (.5 lec.)**

Focuses on awareness of evidentiary value associated with bloodstain interpretation and the importance of proper photographic documentation. Includes discussion on stain and flow patterns, surface considerations, photographing blood patterns, health hazards, and blood detection presumptive tests.

CSM 106 Ballistics**.5 cr. hrs. .5 periods (.5 lec.)**

Focuses on firearms, safety and basic evidence collection in crime scene management. Includes firearms and ammunition recognition and identification, ammunition components and homemade bombs. Also includes the scientific technology involved in comparative analysis.

CSM 107 Courtroom Testimony and Report Writing**.5 cr. hrs. .5 periods (.5 lec.)**

Focuses on general court practices expected of a crime scene investigator. Includes extensive use of mock/moot trial methods to prepare students for court cases. Also includes developing complete and accurate case reports, tools used by defense attorneys, cross examination, and pre-trial interviews.

Information: This course emphasizes writing skills.

Culinary Arts

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

CUL 101 Principles of Restaurant Operations**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals of operating and managing a restaurant, such as concept development; menu development and food purchases; kitchen equipment; and budgeting and cost control. Includes restaurant organization, job definitions and staffing, employee training, marketing, sales and promotion, customer relations and fundamentals of managing an off-premise catering service. In accordance with UNESCO certification, also includes ethical ingredients (local produce, protein, seafood, seeds, and grains); sourcing locally based on seasonality; sustainable kitchen practices; and offering menu items that complement the Southern Arizona growing region.

Prerequisite(s): CUL105 and 140.

CUL 105 Food Service Nutrition and Sanitation**3 cr. hrs. 3 periods (3 lec.)**

Basic nutrition concepts with emphasis on the nutritional concerns of restaurants and other types of food service operations. Includes the theory of nutritional label reading; nutritional food values; and the effects food has on the body. Also includes optimal sanitation policies and procedures; maintaining a clean work environment safe from food-borne illnesses; Hazard Analysis Critical Control Points (HACCP); safety and accident prevention; storage, preparation, and cleaning of work surfaces; and legal requirements based on regulations of the local municipality.

Corequisite(s): CUL 140 CUL 140.

Information: Consent of Culinary Arts Department is required before enrolling in this course. Students are required to pass the National ServSafe Exam prior to enrolling in additional Hospitality or Culinary classes.

CUL 110 Food Service Nutrition**2 cr. hrs. 2 periods (2 lec.)**

Basic nutrition concepts with an emphasis on the nutritional concerns of restaurants and other types of food service operations. Includes health and nutrition; evaluation and use of popular and commercial nutrition information; nutrition elements, such as carbohydrates, lipids, proteins, vitamins, minerals, and water; energy metabolism/balance; and nutrition principles and the life cycle.

CUL 115 Food Service Sanitation and Safety**3 cr. hrs. 3 periods (3 lec.)**

Theory and practice of food service safety and sanitation. Includes creating a safe food service environment; food-borne illnesses; Hazard Analysis Critical Control Points (HACCP); sanitation in the purchasing, receiving, and storage of food; and sanitation in the preparation and service of food. Also includes maintaining sanitary facilities and equipment, safety and accident prevention, and legal requirements for food service safety and sanitation. Reviews legal elements of food service sanitation based on requirements and recommendations of Pima County Health Department.

CUL 130 Savory Cuisine**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Introduction to all facets of hot foods. Includes classic uses of stocks; sauces; soups; liaisons such as roux and starches; cooking techniques; knife and cutting skills; preparation of vegetables; menu scaling; costing; and percentage of yields.

Prerequisite(s): CUL 105 and 140.

Corequisite(s)

CUL 140 Culinary Principles**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the hospitality and culinary arts profession. Includes professionalism; kitchen operations and culinary techniques; kitchen skills; cutting skills and proper knife use; equipment and utensil identification; use and storage of ingredients; and safety precautions. Also includes demonstrations of various cooking methods, such as dry heat cooking (roasting, grilling, sautéing, pan frying), moist heat cooking (braising, shallow poaching, deep poaching, steaming), baking (techniques and production), and other sauces. Also includes herb and spice identification, along with scaling of a recipe, portion yields, and costing.

Corequisite(s): CUL 105 CUL 105.

Information: Consent of Culinary Arts Department is required before enrolling in this course.

CUL 145 Meat Fabrication**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Identification and preparation of meat proteins. Includes identification of primal, subprimal, and retail cuts; fabrication of meat into subprimal (wholesale) and retail cuts; meat preservation, and the seven principles underlying hazard analysis and critical control points (HACCP). Also includes shear force measurements and values, preservation methods, and costing principles.

Prerequisite(s): CUL 105 and 140.

CUL 150 Garde Manger**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Introduction to the fundamentals of Garde Manger. Includes care of equipment, sanitation, and knife skills. Also includes basic sandwiches; herbs and spices; composed salads; bound salad greens; dressings (emulsified and non-emulsified); charcuterie; terrine; and other aspects of garde manger food preservation and preparation.

Prerequisite(s): CUL 105 and 140.

Corequisite(s): CUL 130, CUL 160

CUL 153 Cakes**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Introduction to the art of cake baking. Includes the ingredients, preparation, and baking of cakes. Also includes icings, decorations, and fillings.

Prerequisite(s): CUL 105 and 140.**CUL 156 Pies****1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Introduction to the art of baking pies. Includes a variety of pastry dough, fillings, and other ingredients for creating pies and tarts. Also includes mixing; shaping; baking; and plating and presentation.

Prerequisite(s): CUL 105 and 140.**CUL 160 Pastry Arts I****3 cr. hrs. 5 periods (1 lec., 4 lab)**

A comprehensive introduction to preparing an array of baked goods and sweets. Includes yeast breads; quick breads; creams and custards; cakes; filling and frostings; cookies and brownies; elementary plating; and decorating and garnishing techniques. Also includes ingredients; bakery and pastry vocabulary; and safety and sanitation.

Prerequisite(s): CUL 105 and 140.

Corequisite(s)

CUL 161 Cake Decorating and Candy Making**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Basic principles and methods of cake decorating and candy making. Includes history of cakes; selection of ingredients; cooking procedures; cake assembly; and presentation. Also includes techniques for creating basic candies, including holiday treats.

Prerequisite(s): CUL 105 and 140.**CUL 162 Art of Chocolate****3 cr. hrs. 5 periods (1 lec., 4 lab)**

Introduction to chocolate in the culinary arts. Includes an introduction to the properties of chocolate and the history of chocolate. Also includes the history and preparation of truffles, dough and batter; and molded and free form chocolate art work.

Prerequisite(s): CUL 105 and 140.**CUL 163 Sauces****3 cr. hrs. 5 periods (1 lec., 4 lab)**

Concepts, skills, and techniques for sauce and stock creation. Includes preparation of stocks and sauces in a traditional manner and their uses in classic and contemporary kitchens. Also includes identification of and appropriate uses for liaisons.

Prerequisite(s): CUL 105 and 140.**CUL 166 Gluten-Free Baking****1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Introduction to the art of gluten-free baking. Includes gluten-free breads, desserts, and pizza. Also includes mixing, shaping, baking, and plating and presentation.

Prerequisite(s): CUL 105 and 140.**CUL 168 Specialty and Hearth Breads****3 cr. hrs. 5 periods (1 lec., 4 lab)**

Preparation, baking, and evaluation of specialty and hearth breads. Includes the evolution of bread products, bread preparation, and the proper use of flour and yeast. Also includes preparing a variety of classic artisan bread shapes, presenting attractive finished products, and judging the quality of finished breads. Also includes health and sanitation considerations in bread making. In accordance with UNESCO certification, also includes local sourcing and sustainability of local bread making.

Prerequisite(s): CUL 105 and 140.**CUL 170 Dining Room Operations****2 cr. hrs. 2 periods (2 lec.)**

Theory and practice of operating a casual dining room. Includes preparation for proper dining and service etiquette for staff. Also includes proper techniques for clearing tables, service of wine, beverage sales and techniques, salesmanship, and customer service.

Prerequisite(s): CUL 105 and 140.

Corequisite(s)

CUL 174 From Garden to Table**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Introduction to preparing edible plants grown in the Sonoran Desert. Includes the best vegetable and herb selection for year-round harvest, as well as an investigation of optimal soil composition, composting, planting and harvesting techniques, seed saving, and preserving and storage methods. Also includes the nutritional advantage of locally grown plants and how to prepare them for optimal nutritional value. In accordance with UNESCO certification, also includes a survey of best practices for sustainability and recycling in the food service industry.

Prerequisite(s): CUL105 and 140.

CUL 180 Food in History**3 cr. hrs. 3 periods (3 lec.)**

History of food, the story of cuisine, and the social history of eating. Includes collecting, gathering and hunting food; stock-breeding and farming; sacramental foods; the economy of food markets; the era of merchants; New World food discoveries; seed migration; and professional food preparation. Also includes local indigenous foods of the people who resided in Southern Arizona; Native cultivation and methods of desert foraging; and Spanish (Father Kino) and Mexican/Chinese influences.

Prerequisite(s): CUL 105 and 140.

CUL 185 Catering Operations**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Theory and practice of planning and executing catering functions. Includes booking and planning, banquet room set-up and staffing, banquet service, guest payment and follow up, and specialized functions.

Prerequisite(s): CUL 105 and 140.

CUL 189 Culinary Arts Capstone I**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

Preparation of a final culinary project that meets the learning outcomes required in the specific cooking/lab and lecture courses. Also includes review of culinary principles and demonstration of sanitation skills and safety practices.

Prerequisite(s): CUL 105 and 140 or concurrent enrollment.

Information: Course activities may take place in a simulated work setting. This is the capstone experience.

CUL 199WK Co-op Work: Culinary Arts**1-3 cr. hrs. 5-15 periods (5-15 lab)**

A supervised cooperative work program for students in culinary arts. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.

Prerequisite(s): CUL 130.

Corequisite(s): CUL 199

Information: May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

CUL 230 Hot Foods II**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Continuation of preparation and service of hot food in a contemporary kitchen. Includes cooking techniques; contemporary sauce making; vegetables, grains, and starches; natural liaisons; food plating; and sanitation procedures and techniques.

Prerequisite(s): CUL 130 and 140.

Corequisite(s): CUL 250, CUL 260

CUL 244 Confections, Show Pieces, & Plated Desserts**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Concepts, skills, and techniques used to create chocolate and sugar decorations that embellish other desserts or function as artistic showpieces for display. Includes techniques such as applying chocolate colors with a spray gun, use of various types of molds, and making cut-out decorations and silk screens that will be applied to showpieces. Also includes an introduction to sugar techniques such as pastillage, saturated sugar, pulled sugar (e.g., ribbons and flowers), blown sugar (spun, piped, bubble, straw) to create three-dimensional shapes, and poured sugar to create showpieces.

Prerequisite(s): CUL 160.

CUL 251 International Cuisine: World of Flavor**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Concepts, skills, and techniques used to create global cuisine. Includes ingredients and foods from around the world. Also includes culinary techniques that incorporate culture and food traditions from Latin America, the Mediterranean, Europe, Asia, and the United States.

Prerequisite(s): CUL 130, 150, and 160.

Corequisite(s)

CUL 256 Special Diets**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Skills and techniques needed to plan and prepare special diets while providing culinary inspiration for healthy, wholesome meals. Includes a wide range of dietary challenges chefs must consider, such as nutrition, taste, and healthy ingredients while preparing gluten free, vegetarian, and vegan meals. Also includes substitutions as alternatives to prohibited ingredients.

Prerequisite(s): CUL 130, 150, and 160.

CUL 260 Pastry Arts II**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Advanced theory and practice of operating a bakery or pastry shop in a hotel or restaurant kitchen. Includes planning, ordering, and scheduling for bakery production; safety and sanitation; and bakery and pastry vocabulary. Also includes advanced yeast breads; classic French pastries; ice cream and frozen desserts; pastry assembly; pastry garnishes; and complex plated desserts.

Prerequisite(s): CUL 160

Corequisite(s): CUL 230, CUL 251

CUL 266 Ice Creams/Bavarians/Mousse/Sauces**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Professional dessert presentations using both classical and modern techniques of mousse, Bavarians, ice creams, sorbets and sauces. Includes the theory and applications necessary to prepare light desserts: the science and effects of egg coagulation, ice crystallization, and gelatin on liquids and fats in a hands-on situation. Also includes current application of fruit cookery, dessert sauces and tableside desserts.

Prerequisite(s): CUL 160.

CUL 276 Pastry Production**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Techniques and principles of skill development, production planning, and pace of production in the bakeshop. Includes preparation of a variety of cookies, sponge and specialty cakes, and breads.

Prerequisite(s): CUL 160.

CUL 289 Culinary Arts Capstone II**1 cr. hrs. 1.5 periods (.5 lec., 1 lab)**

The capstone experience for the Culinary concentration of the Hospitality Leadership Associate of Applied Science. Includes preparation of a final culinary project that meets the learning outcomes required in specific cooking/lab and lecture courses. Also includes a review of culinary principles, the demonstration of sanitation skills and safety practices, and the display of an advanced level of professionalism and proficiency in kitchen operations and food preparation.

Prerequisite(s): CUL 130, 150, 160; prerequisite or concurrent enrollment in 174, 180, 251, and 256.

Information: Course activities may take place in a simulated work setting.

Dance

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DNC 107 Dance Conditioning**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Introduction to the concepts of dance as a strengthening, stretching, and cardiovascular activity and the awareness of alignment techniques through specific movement experiences and images. Includes class protocol, warm-up, floor work, standing and center floor work, locomotor work, elements of dance, and developing the craft.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 150 Ballet I**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Introduction to the theory and practice of ballet at the beginning level. Includes terminology, barre, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 151 Ballet II**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 150. Includes ballet techniques at the intermediate level, terminology, barre, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Prerequisite(s): DNC 150.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 152 Ballet III**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 151. Includes ballet technique at the advanced level, ballet terminology, barre, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Prerequisite(s): DNC 151.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 166 Modern Dance I**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Development of basic skills for dance. Includes modern dance technique at a beginning level, class protocol, warm-up, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 167 Modern Dance II**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 166. Includes development of intermediate skills for modern dance, class protocol, warm-up, floor work, standing and centering floor work, locomotor work, elements, and developing the craft.

Prerequisite(s): DNC 166.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 168 Modern Dance III**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 167. Includes development of advanced skills for modern dance, class protocol, warm-up, floor work, locomotor work, elements and developing the craft.

Prerequisite(s): DNC 167.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 180 Choreography**2 cr. hrs. 2 periods (2 lec.)**

The study of basic dance composition and construction of a phrase, structure, and form. Includes exploring the basic elements of dance, building a movement phrase, choreographic elements, constructing a dance, and analyzing the effectiveness of choreography.

Prerequisite(s): DNC 150 or 166 or 219.

Information: Prerequisite(s) may be waived with consent of instructor. May be taken two times for a maximum of four credit hours. If course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 200 Dance Appreciation and History**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the art of dance from its beginning as a religious form to its current place on Broadway and television.

Includes concepts in dance appreciation, themes and purposes of dance, analyzing dance works, styles of dance, roles of and major historical periods of world dance, and movement sessions.

DNC 219 Jazz Dance I**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Introduction and development of movement skills necessary to prepare the body as an instrument of expression in jazz dance styles. Includes class protocol, warm-up, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 220 Jazz Dance II**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 219. Progressive development of alignment for intermediate level jazz dance. Includes class protocol, warm-up, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Prerequisite(s): DNC 219.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 221 Jazz Dance III**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Continuation of DNC 220. Progressive development of alignment for advanced level jazz dance. Includes class protocol, warm-up, floor work, standing and center floor work, locomotor work, elements, and developing the craft.

Prerequisite(s): DNC 220.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 269 Dance Ensemble**3 cr. hrs. 6 periods (6 lab)**

Practical experience in all aspects for taking a dance piece from basic choreography and creating a professional performance. Includes rehearsal/performance process, responsibilities of a performer and/or a choreographer, performance skills, choreographic review; costuming, make-up, sets, and props; publicity, and analysis of the concert.

Prerequisite(s): DNC 150 or 166 or 219.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DNC 280 Business for Dance Careers**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the various careers available in dance and the appropriate business skills. Includes careers in dance, grant and proposal writing, agency interface, business skills, publicity, and creating a dance business on paper.

DNC 296 Independent Studies in Dance**1-3 cr. hrs. 2-6 periods (2-6 lab)**

Composition and/or in-depth independent study in an area of the student's choice with approval by the supervising instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Dental Assisting Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DAE 159 Introduction to Health Care for Dental Assisting**2 cr. hrs. 2 periods (2 lec.)**

Basic skills essential to working successfully with patients and co-workers in dental offices and clinics, as a member of the dental health team. Includes study skills, psychology, vital signs, communication in the dental environment, job entry skills, research, and oral speech projects.

Corequisite(s): DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 160 Orientation to Dental Care**1 cr. hrs. 1 periods (1 lec.)**

Overview of the field of dental care. Includes the profession of dentistry, areas of service, ethics, and jurisprudence.

Corequisite(s): DAE 159, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 161 Biomedical Dental Science**3 cr. hrs. 3 periods (3 lec.)**

Biosciences as they relate to the oral cavity. Impacts of anatomy, physiology, microbiology, oral pathology, and nutrition on dental health.

Corequisite(s): DAE 159, DAE 160, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 162 Dental Assisting I**2 cr. hrs. 2 periods (2 lec.)**

Principles and techniques of dental assisting. Includes tooth morphology of human dentition, hand and rotary dental instruments, instruments used in various operative procedures, and chairside procedures.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 162LB Dental Assisting I Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of DAE 162. Principles and techniques of dental assisting. Includes tooth morphology of human dentition, hand and rotary dental instruments, instruments used in various operative procedures, and chairside procedures.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 163 Oral Radiography**2 cr. hrs. 2 periods (2 lec.)**

Principles to dental radiography as a diagnostic aid. Includes radiation protection and biology. Also includes clinic experience in exposing, processing, mounting, and interpreting radiographs on mannequins and patients using a variety of radiographic techniques.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course. DHE 116 can be substituted for DAE 163 if completed within the last three years, see academic advisor or faculty for information regarding course substitution.

DAE 163LC Oral Radiography Clinical Lab**1 cr. hrs. 3 periods (3 lab)**

This is the clinical portion of DAE 163. Principles to dental radiography as a diagnostic aid. Includes radiation production and biology. Also includes clinic experience in exposing, processing, mounting, and interpreting radiographs on mannequins and patients using a variety of radiographic techniques.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 164, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course. DHE 116LC can be substituted for DAE 163LC if completed within the last three years, see academic advisor or faculty for information regarding course substitution.

DAE 164 Dental Materials**2 cr. hrs. 2 periods (2 lec.)**

Chemical and physical properties of dental materials used in dental practice. Includes introduction to dental materials, preventive sealants, restorative materials, dental cements, impression materials, gypsum products, and miscellaneous dental materials. Also includes gold, non-precious alloys, and casting of metals.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164LB, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course. DHE 132 can be substituted for DAE 164 if completed within the last three years, see academic advisor or faculty for information regarding course substitution.

DAE 164LB Dental Materials Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of DAE 164. Chemical and physical properties of dental materials used in dental practice. Includes introduction to dental materials, preventive sealants, restorative materials, dental cements, impression materials, gypsum products, and miscellaneous dental materials. Also includes gold, non-precious alloys, and casting of metals.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 165, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course. DHE 132LB can be substituted for DAE 164LB if completed within the last three years, see academic advisor or faculty for information regarding course substitution.

DAE 165 Dental Assisting Procedures I**1 cr. hrs. 1 periods (1 lec.)**

Techniques and procedures of chairside dental assisting. Includes dental equipment and room design; chairside assisting and team approach; procedures applied in clinical treatment; and computer systems and technology in the dental environment. Also includes the application of student supervised experience in performing dental assisting functions in the clinical setting on patients.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 165LC Dental Assisting Procedures I**1 cr. hrs. 4 periods (4 lab)**

Dental Assisting Procedures Clinical I This is the clinical portion of DAE 165. Techniques and procedures of chairside dental assisting. Includes dental equipment and room design; chairside assisting and team approach; procedures applied in clinical treatment; and computer systems and technology in the dental environment. Also includes the application of student supervised experience in performing dental assisting functions in the clinical setting on patients.

Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165

Information: Consent of program coordinator is required before enrolling in this course.

DAE 166 Dental Assisting II**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of dental assisting. Includes pharmacology and therapeutics; and dental office inventory control. Also includes techniques and procedures for emergency medical/dental care as applied to dental assisting.

Prerequisite(s): DAE 159, 160, 161, 162, 162LB, 163, 163LC, 164, 164LB, 165, and 165LB.

Corequisite(s): DAE 167, DAE 169, DAE 169LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 167 Dental Assisting III**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of dental practices management and oral health education as applied to dental assisting. Includes preventive dentistry in dental health education, dental office procedures, and summary and evaluation.

Prerequisite(s): DAE 159, 160, 161, 162, 162LB, 163, 163LC, 164, 164LB, 165, and 165LB.

Corequisite(s): DAE 166, DAE 169, DAE 169LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 169 Dental Assisting Procedures II**.5 cr. hrs. .5 periods (.5 lec.)**

Application and evaluation of skills acquired in a clinical environment. Includes specialty seminars and guest lecturers; rotations to specialty practices; first and second clinical externship rotation assignments; discussion and analysis of clinical externship; and evaluation process.

Prerequisite(s): DAE 159, 160, 161, 162, 162LB, 163, 163LC, 164, 164LB, 165, and 165LC.

Corequisite(s): DAE 166, DAE 167, DAE 169LC

Information: Consent of program coordinator is required before enrolling in this course.

DAE 169LC Dental Assisting Procedures Clinical II**6 cr. hrs. 24 periods (24 lab)**

This is the clinical portion of DAE 169. Application and evaluation of skills acquired in a clinical environment. Includes specialty seminars and guest lecturers; rotations to specialty practices; first and second clinical externship rotation assignments; discussion and analysis of clinical externship; and evaluation process.

Prerequisite(s): DAE 159, 160, 161, 162, 162LB, 163, 163LC, 164, 164LB, 165, and 165LC.

Corequisite(s): DAE 166, DAE 167, DAE 169

Information: Consent of program coordinator is required before enrolling in this course.

Dental Hygiene

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DHE 101 Dental Hygiene I

2 cr. hrs. 2 periods (2 lec.)

Introduction to the procedures used in the pre-clinical practice of dental hygiene at the beginning level. Includes professionalism and ethics, infection control, body mechanics/ergonomics, evaluation of patient medical and dental history, and assessment data. Also includes instrumentation, laboratory practice of dental hygiene procedures on student partners (e.g. removal of soft deposits, fluorides, various clinical procedures), and awareness of diverse patient populations.

Prerequisite(s): BIO 205IN and CIS/CSA 104.

Corequisite(s): DHE 101LC, DHE 104, DHE 104LB, DHE 107, DHE 112, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 101LC Dental Hygiene I Clinical

3 cr. hrs. 12 periods (12 lab)

This is the clinical lab portion of DHE 101. Introduction to the procedures used in the pre-clinical practice of dental hygiene at the beginning level. Includes professionalism and ethics, infection control, body mechanics/ergonomics, evaluation of patient medical and dental history, and assessment data. Also includes instrumentation, laboratory practice of dental hygiene procedures on student partners (e.g. removal of soft deposits, fluorides, various clinical procedures), and awareness of diverse patient populations.

Corequisite(s): DHE 101, DHE 104, DHE 104LB, DHE 107, DHE 112, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 104 Dental and Oral Morphology

1 cr. hrs. 1 periods (1 lec.)

Form and function of primary and permanent dentition. Includes oral cavity proper; form, function and physiology; and tooth identification. Also includes terminology, deciduous dentition morphology, occlusion, tooth anomalies, and root morphology.

Corequisite(s): DHE 101, DHE 101LC, DHE 104LB, DHE 107, DHE 112, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 104LB Dental and Oral Morphology Lab

1 cr. hrs. 3 periods (3 lab)

This is the lab portion of DHE 104. Form and function of primary and permanent dentition. Includes oral cavity proper; form, function and physiology; and tooth identification. Also includes terminology, deciduous dentition morphology, occlusion, tooth anomalies, and root morphology.

Corequisite(s): DHE 101, DHE 101LC, DHE 104, DHE 107, DHE 112, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 107 Oral Embryology and Histology

2 cr. hrs. 2 periods (2 lec.)

The development and histology of teeth related to the intra and extra oral tissues of the head as they relate to the practice of dental hygiene. Includes terminology and formation of primary embryonic layers, histology, tooth development, enamel, dentin, and pulp. Also includes cementum, periodontal ligament, bone and alveolar process, mucous membranes, and salivary glands.

Corequisite(s): DHE 101, DHE 101LC, DHE 104, DHE 104LB, DHE 112, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 112 Preventive Dentistry

3 cr. hrs. 3 periods (3 lec.)

Introduction to dental disease and the promotion of dental health. Includes the role of dental hygienists as prevention specialists, clinical treatment theories, patient care readiness, dental disease, risk assessment, and oral hygiene instruction. Also includes dentin sensitivity, enamel demineralization and remineralization, chemotherapeutics, and tobacco cessation.

Corequisite(s): DHE 101, DHE 101LC, DHE 104, DHE 104LB, DHE 107, DHE 116, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 116 Oral Radiography**2 cr. hrs. 2 periods (2 lec.)**

Principles of dental radiography as a diagnostic aid. Includes radiation production and biology. Also includes clinic experience in exposing, processing, mounting, and interpreting radiographs on mannequins and patients using a variety of radiographic techniques.

Corequisite(s):DHE 101, DHE 101LC, DHE 104, DHE 104LB, DHE 107, DHE 112, DHE 116LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. DAE 163 can be substituted for DHE 116 if completed within the last three years, see academic advisor or faculty for information regarding course substitution. To substitute DAE 163 for DHE 116, student must have current CDA certification.

DHE 116LC Oral Radiography Clinical**1 cr. hrs. 4 periods (4 lab)**

This is the clinical lab portion of DHE 116. Principles of dental radiography as a diagnostic aid. Includes radiation production and biology. Also includes clinic experience in exposing, processing, mounting, and interpreting radiographs on mannequins and patients using a variety of radiographic techniques.

Corequisite(s):DHE 101, DHE 101LC, DHE 104, DHE 104LB, DHE 107, DHE 112, DHE 116

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. DAE 163LC can be substituted for DHE 116LC if completed within the last three years, see academic advisor or faculty for information regarding course substitution. To substitute DAE 163LC for DHE 116LC, student must have current CDA certification.

DHE 119 Periodontology**2 cr. hrs. 2 periods (2 lec.)**

Survey of periodontology comprised of the etiology, diagnosis, and prognosis of periodontal disease. Includes tissues and microscopic anatomy of the periodontium, historical background, causes, microbiology and classification of periodontal disease, local and systemic contributing factors, clinical assessment, radiographic analysis, and evidence-based periodontal care. Also includes decision making during treatment planning, nonsurgical and patient's role in periodontal therapy, maintenance therapy, research articles and applications, and new dental technology.

Prerequisite(s): DHE 101, 101LC, 104, 104LB, 107, 112, 116, and 116LC.

Corequisite(s):DHE 120, DHE 122, DHE 132, DHE 132LB, DHE 150, DHE 150LB, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 120 Oral Pathology**2 cr. hrs. 2 periods (2 lec.)**

Overview of oral pathology which is the study of human disease as found within all of the tissues represented in the area of the oral cavity. Includes introduction to pathology, diagnostic methods, normal exam and variants of normal, inflammation and repair, physical/chemical injuries of the oral tissues, and immunity and autoimmune diseases. Also includes infectious diseases, developmental disorders, neoplasia, genetic disorders, and oral manifestations of systemic disease.

Prerequisite(s): DHE 101/101LC, 104/104LB, 107, 112 and 116/116LC.

Corequisite(s):DHE 119, DHE 122, DHE 132, DHE 132LB, DHE 150, DHE 150LB

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 122 Pharmacology**2 cr. hrs. 2 periods (2 lec.)**

Introduction to the theory of pharmacology as it relates to dentistry. Includes drug action and handling, prescription writing, autonomic drugs, non-opioid analgesics, anti-infective agents, anti-fungal and anti-viral agents, anti-anxiety agents, cardiovascular agents, and anti-convulsant agents. Also includes psychotherapeutic agents, antacids and antihistamines, adreno cortico steroid agents, anti-neoplastic agents, and respiratory and gastrointestinal medications, emergency medications, and drug interactions and drug abuse.

Prerequisite(s): DHE 101, 101LC, 104, 104LB, 107, 112, 116, and 116LC.

Corequisite(s):DHE 119, DHE 120, DHE 132, DHE 132LB, DHE 150, DHE 150LB, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 132 Dental Materials**2 cr. hrs. 2 periods (2 lec.)**

Chemical and physical properties of dental materials used in dental practice. Includes introduction to dental materials, preventive sealants and restorative materials, dental cements. Also includes impression materials, gypsum products, miscellaneous dental materials; and gold, non-precious alloys, and casting of metals.

Prerequisite(s): DHE 101, 101LC, 104, 104LB, 107, 112, 116, and 116LC.

Corequisite(s): DHE 119, DHE 120, DHE 122, DHE 132LB, DHE 150, DHE 150LB, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. DAE 164 can be substituted for DHE 132 if completed within the last three years, see academic advisor or faculty for information regarding course substitution. To substitute DAE 164 for DHE 132, student must have current CDA certification.

DHE 132LB Dental Materials Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of DHE 132. Chemical and physical properties of dental materials used in dental practice. Includes introduction to dental materials, preventive sealants and restorative materials, dental cements. Also includes impression materials, gypsum products, miscellaneous dental materials; and gold, non-previous alloys, and casting of metals.

Prerequisite(s): DHE 101, 101LC, 104, 104LB, 107, 112, 116, and 116LC.

Corequisite(s): DHE 119, DHE 120, DHE 122, DHE 132, DHE 150, DHE 150LB, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. DAE 164LB can be substituted for DHE 132LB if completed within the last three years, see academic advisor or faculty for information regarding course substitution. To substitute DAE 164LB for DHE 132LB, student must have current CDA certification.

DHE 150 Dental Hygiene II**2 cr. hrs. 2 periods (2 lec.)**

Continuation of DHE 101/10LC. Application of dental hygiene skills with a variety of clinical patients with simple dental hygiene care plans. Includes instrument review, evidence-based decision making and treatment planning, medical emergency management review, special needs patients, powered instruments, air powder polishing and stain removal, care of dental prostheses, advanced instrumentation and alternate fulcrums, tobacco cessation, subgingival irrigation, and antimicrobials. Also includes dental implant instruments, case studies, table clinics, and laboratory procedures.

Prerequisite(s): DHE 101/101LC, 104/104LB, 107, 112, and 116LC.

Corequisite(s): DHE 119, DHE 120, DHE 122, DHE 132, DHE 132LB, DHE 150LB, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 150LB Dental Hygiene II Lab**.5 cr. hrs. 1.5 periods (1.5 lab)**

This is the lab portion of DHE 150. Application of dental hygiene skills with a variety of clinical patients with simple dental hygiene care plans. Includes instrument review, evidence-based decision making and treatment planning, medical emergency management review, special needs patients, powered instruments, air powder polishing and stain removal, care of dental prostheses, advanced instrumentation and alternate fulcrums, tobacco cessation, subgingival irrigation, and antimicrobials. Also includes dental implant instruments, case studies, table clinics, and laboratory procedures.

Prerequisite(s): DHE101/101LC, 104/104LB, 107, 112 and 116/116LC.

Corequisite(s): DHE 119, DHE 120, DHE 122, DHE 132, DHE 132LB, DHE 150, DHE 150LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 150LC Dental Hygiene II Clinical**3 cr. hrs. 12 periods (12 lab)**

This is the clinical lab portion of DHE 150. Application of dental hygiene skills with a variety of clinical patients with simple dental hygiene care plans. Includes instrument review, evidence-based decision making and treatment planning, medical emergency management review, special needs patients, powered instruments, air powder polishing and stain removal, care of dental prostheses, advanced instrumentation and alternate fulcrums, tobacco cessation, subgingival irrigation, and antimicrobials. Also includes dental implant instruments, case studies, table clinics, and laboratory procedures.

Prerequisite(s): DHE 101/101LC, 104/104LB, 107, 112, and 116LC.

Corequisite(s): DHE 119, DHE 120, DHE 122, DHE 132, DHE 132LB, DHE 150, DHE 150LB

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 160LC Clinical Skills Enhancement I**.25-2 cr. hrs. 1-8 periods (1-8 lab)**

A clinical remediation course designed to support identified first year dental hygiene students who are performing at or below clinic course expectations. Includes education plan, development of individualized clinical remediation plan, and assessment.

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DHE 196 Independent Studies in Dental Hygiene**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent clinical applications, reading, projects, or lab activities for continuing student development in dental hygiene under faculty guidance.

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DHE 208 Pain and Anxiety Control for Dental Hygiene**1 cr. hrs. 1 periods (1 lec.)**

Delivery of local anesthetics. Includes introduction to pain and anxiety control; pharmacology, neurophysiology, and local anesthetic agents; nitrous oxide and oxygen analgesia. Also includes health history and complications, treatment, laboratory practices on student partners, emergency procedures, and head and neck anatomy.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208LC, DHE 209, DHE 212, DHE 250, DHE 250LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 208LC Pain and Anxiety Control for Dental Hygiene Clinical**1 cr. hrs. 4 periods (4 lab)**

This is the clinical lab portion of DHE 208. Delivery of local anesthetics. Includes introduction to pain and anxiety control; pharmacology, neurophysiology, and local anesthetic agents; nitrous oxide and oxygen analgesia. Also includes health history and complications, treatment, laboratory practices on student partners, emergency procedures, and head and neck anatomy.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208, DHE 209, DHE 212, DHE 250, DHE 250LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 209 Ethics and Practice Management**1 cr. hrs. 1 periods (1 lec.)**

Application of ethical theories and ethical principles in the practice of dental hygiene. Includes the business of dentistry, dental hygiene career opportunities, ethics, and jurisprudence.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208, DHE 208LC, DHE 212, DHE 250, DHE 250LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 212 Nutrition for Oral Health**1 cr. hrs. 1 periods (1 lec.)**

Introduction of the principles of nutrition including food sources, digestion, absorption, and metabolism of nutrients essential to the oral health of individuals. Includes nutrition as the foundation for general and oral health, nutritional and oral implications of common chronic health conditions, carbohydrates, proteins, lipids, fats, minerals and mineralization, medications and oral health, and nutritional concerns for the dentally compromised patient.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208, DHE 208LC, DHE 209, DHE 250, DHE 250LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 213 Advanced Periodontal Services**2 cr. hrs. 2 periods (2 lec.)**

Application of Dental Hygiene skills on advanced periodontal patients. Includes periodontal exam and initial phase, treatment plan, periodontal classifications, plaque control, scaling and root planning indications and limitations, sonic and ultrasonic therapy in periodontal services, hand and powered instrumentation, and implant maintenance. Also includes occlusal evaluation and adjustment, assessment, reevaluation of treatment and maintenance, periodontal healing, antimicrobials and antibiotics, surgical procedures, and nonsurgical periodontal therapy.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250, 250LC.

Corequisite(s): DHE 213CA, DHE 213CB, DHE 216, DHE 255, DHE 255LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 213CA Advanced Periodontal Services Clinical - A**1 cr. hrs. 3 periods (3 lab)**

This is the clinical lab part A portion of DHE 213. Application of Dental Hygiene skills on advanced periodontal patients. Includes periodontal exam and initial phase, treatment plan, periodontal classifications, plaque control, scaling and root planning indications and limitations, sonic and ultrasonic therapy in periodontal services, hand and powered instrumentation, and implant maintenance. Also includes occlusal evaluation and adjustment, assessment, reevaluation of treatment and maintenance, periodontal healing, antimicrobials and antibiotics, surgical procedures, and nonsurgical periodontal therapy.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250 and 250LC.

Corequisite(s): DHE 213, DHE 213CB, DHE 216, DHE 255, DHE 255LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 213CB Advanced Periodontal Services Clinical - B**1 cr. hrs. 4 periods (4 lab)**

This is the clinical lab portion part B of DHE 213. Application of Dental Hygiene skills on advanced periodontal patients. Includes periodontal exam and initial phase, treatment plan, periodontal classifications, plaque control, scaling and root planning indications and limitations, sonic and ultrasonic therapy in periodontal services, hand and powered instrumentation, and implant maintenance. Also includes occlusal evaluation and adjustment, assessment, reevaluation of treatment and maintenance, periodontal healing, antimicrobials and antibiotics, surgical procedures, and nonsurgical periodontal therapy.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250 and 250LC.

Corequisite(s): DHE 213, DHE 213CA, DHE 216, DHE 255, DHE 255LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 216 Community and Dental Health Education**3 cr. hrs. 3 periods (3 lec.)**

Overview of public dental health education. Includes critiquing dental literature, community dental health planning, basic biostatistics, and epidemiology and research in the dental community. Also includes dental needs and demands, dental care delivery and prevention in the United States.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250 and 250LC.

Corequisite(s): DHE 213, DHE 213CA, DHE 213CB, DHE 255, DHE 255LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 250 Dental Hygiene III**3 cr. hrs. 3 periods (3 lec.)**

Continuation of DHE 150, 150LB, and 150LC. Application of dental hygiene skills with a variety of clinical patients with dental hygiene care plans at the intermediate level. Includes dental hygiene theory and care, instrumentation, and care of patients with various physical disabilities.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208, DHE 208LC, DHE 209, DHE 212, DHE 250LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 250LC Dental Hygiene III Clinical**4 cr. hrs. 16 periods (16 lab)**

Continuation of DHE 150, 150LB, and 150LC. This is the clinical lab portion of DHE 250. Application of dental hygiene skills with a variety of clinical patients with dental hygiene care plans at the intermediate level. Includes dental hygiene theory and care, instrumentation, and care of patients with various physical disabilities.

Prerequisite(s): DHE 119, 120, 122, 132, 132LB, 150, 150LB, and 150LC.

Corequisite(s): DHE 208, DHE 208LC, DHE 209, DHE 212, DHE 250

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 255 Dental Hygiene IV**1 cr. hrs. 1 periods (1 lec.)**

Continuation of DHE 250/250LC. Includes application of dental hygiene skills with a variety of clinical patients with dental hygiene care plans at the advanced level. Also includes national, regional, and state exam preparation, advanced instrumentation, advanced ultrasonic inserts and techniques, and preparing for entry level employment.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250, and 250LC.

Corequisite(s): DHE 213, DHE 213CA, DHE 213CB, DHE 216, DHE 255LC

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 255LC Dental Hygiene IV Clinical**3 cr. hrs. 12 periods (12 lab)**

This is the clinical lab portion of DHE 255. Includes application of dental hygiene skills with a variety of clinical patients with dental hygiene care plans at the advanced level. Also includes national, regional, and state exam preparation, advanced instrumentation, advanced ultrasonic inserts and techniques, and preparing for entry level employment.

Prerequisite(s): DHE 208, 208LC, 209, 212, 250, and 250LC.

Corequisite(s): DHE 213, DHE 213CA, DHE 213CB, DHE 216, DHE 255

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course.

DHE 260LC Clinical Skills Enhancement II**.25-2 cr. hrs. 1-4 periods (1-4 lab)**

A clinical remediation course designed to support identified second year dental hygiene students who are performing at or below clinic course expectations. Includes identification of need through clinical performance scores, development of individualized clinical remediation plan, and assessment.

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DHE 296 Advanced Independent Study: Dental Hygiene**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Students independently continue their development in Dental Hygiene under the guidance of a faculty member.

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. **Information:** May be taken two times for a maximum of eight credit hours.

Information: Students must be admitted to the PCC Dental Hygiene program and obtain consent of the Dental Hygiene department before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Dental Lab Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DLT 101 Dental Morphology**2 cr. hrs. 2 periods (2 lec.)**

Introduction to human dental morphology through lectures, readings, and sculpting exercises. Includes the dental health care team, anatomical landmarks and terminology, tooth development and landmarks, tooth sculpting, articulators and model mounting, occlusion, and care of laboratory instruments.

Prerequisite(s): With a C or higher: REA 091 or higher, or Reading Assessment into REA 112.

Corequisite(s): DLT 101LB

Information: Consent of program director is required before enrolling in this course.

DLT 101LB Dental Morphology Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of DLT 101. Introduction to human dental morphology through lectures, readings, and sculpting exercises. Includes the dental health care team, anatomical landmarks and terminology, tooth development and landmarks, tooth sculpting, articulators and model mounting, occlusion, and care of laboratory instruments.

Prerequisite(s): With a C or higher: REA 091 or higher, or Reading Assessment into REA 112.

Corequisite(s): DLT 101

Information: Consent of program director is required before enrolling in this course.

DLT 102 Non-Metallic Dental Materials**3 cr. hrs. 3 periods (3 lec.)**

Principles of chemistry and physics, identification, selection, and manipulation of non-metallic dental materials. Includes an introduction to dental materials, management of materials, impression material, gypsum materials, dental waxes, refractory materials, and acrylic resin.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Information: Consent of program director is required before enrolling in this course.

DLT 103 Complete Dentures**1 cr. hrs. 1 periods (1 lec.)**

Examination of the relationship between upper and lower dentures as interpreted on a functional articulator. Includes evaluation of preliminary impressions and fabrication of models, custom impression trays, evaluation of final impression and master model, baseplate fabrication, occlusion rims, articulation and mounting of working models, and prosthetic tooth selection. Also includes setting artificial denture teeth, processing the trial denture, finishing complete dentures, fabricating surgical templates, and denture repair and relines.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 103LB

Information: Consent of program director is required before enrolling in this course.

DLT 103LB Complete Dentures Lab**3 cr. hrs. 9 periods (9 lab)**

This is the Lab Portion of DLT 103. Examination of the relationship between upper and lower dentures as interpreted on a functional articulator. Includes evaluation of preliminary impressions and fabrication of models, custom impression trays, evaluation of final impression and master model, baseplate fabrication, occlusion rims, articulation and mounting of working models, and prosthetic tooth selection. Also includes setting artificial denture teeth, processing the trial denture, finishing complete dentures, fabricating surgical templates, and denture repair and relines.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 103

Information: Consent of program director is required before enrolling in this course.

DLT 104 Dental Occlusion**2 cr. hrs. 2 periods (2 lec.)**

Introduction to the principles of techniques used in the dental laboratory. Includes how to trace and label all aspects of the maxillary and mandibular teeth, control of inlay wax application, restoring occlusal surfaces and clinical crowns to ideal occlusion, functional occlusion on articulated casts, and philosophies of different wax added systems.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 104LB

Information: Consent of program director is required before enrolling in this course.

DLT 104LB Dental Occlusion Lab**2 cr. hrs. 6 periods (6 lab)**

This is the Lab portion of DLT 104. Introduction to the principles of techniques used in the dental laboratory. Includes how to trace and label all aspects of the maxillary and mandibular teeth, control of inlay wax application, restoring occlusal surfaces and clinical crowns to ideal occlusion, functional occlusion on articulated casts, and philosophies of different wax added systems.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 104

Information: Consent of program director is required before enrolling in course.

DLT 105 Partial Denture Construction**1 cr. hrs. 1 periods (1 lec.)**

Construction of removable partial dentures (RPDs). Includes evaluation and fabrication of preliminary impressions and models, model survey and RPD design, evaluation and fabrication of final impressions and master models, block out procedures, model duplication and refractory casts, creating wax patterns, spruing and investing frameworks, burnout and alloy casts, and recovery of RPD casting. Also includes metal finishing and polishing, occlusion rims, prosthetic tooth selection and tooth setting, processing and finishing the RPD, and soldering of dental alloys.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 105LB

Information: Consent of program director is required before enrolling in this course.

DLT 105LB Partial Denture Construction Lab**3 cr. hrs. 9 periods (9 lab)**

This is the Lab portion of DLT 105. Construction of removable partial dentures (RPDs). Includes evaluation and fabrication of preliminary impressions and models, model survey and RPD design, evaluation and fabrication of final impressions and master models, block out procedures, model duplication and refractory casts, creating wax patterns, spruing and investing frameworks, burnout and alloy casts, and recovery of RPD casting. Also includes metal finishing and polishing, occlusion rims, prosthetic tooth selection and tooth setting, processing and finishing the RPD, and soldering of dental alloys.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 105

Information: Consent of program director is required before enrolling in this course.

DLT 106 Orthodontic Appliances**2 cr. hrs. 2 periods (2 lec.)**

Construction and theory of simple orthodontic appliances. Includes evaluation of preliminary impressions and fabrication of orthodontic study models, model trimming and evaluation, classification of occlusion and malocclusion types, tooth numbering systems and identification. Also includes wrought wire fabrication, application of wire bending skills, fabrication of removable tooth retaining and moving appliances, and fixed space maintaining appliances.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 106LB

Information: Consent of program director is required before enrolling in this course.

DLT 106LB Orthodontic Appliances Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of DLT 106. Construction and theory of simple orthodontic appliances. Includes evaluation of preliminary impressions and fabrication of orthodontic study models, model trimming and evaluation, classification of occlusion and malocclusion types, tooth numbering systems and identification. Also includes, wrought wire fabrication, application of wire bending skills, fabrication of removable tooth retaining and moving appliances, and fixed space maintaining appliances.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 106

Information: Consent of program director is required before enrolling in this course.

DLT 108 Laboratory Management**3 cr. hrs. 3 periods (3 lec.)**

Examination of the principles of dental laboratory management. Includes blood borne pathogens, infection control guidelines and procedures, Occupational Safety and Health Administration (OSHA) regulations for dental laboratories. Also includes post exposure plan, legal and ethical aspects of the industry, history of dentistry, National Association of Dental Laboratories, and establishing a dental laboratory.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Information: Consent of program director is required before enrolling in this course.

DLT 201 Dental Laboratory I**2 cr. hrs. 2 periods (2 lec.)**

Introduction to the principles and techniques used in the dental laboratory. Includes fabrication and articulation of removable die models, spruing, investing, and casting crown and bridge patterns. Also includes repairs, soldering, and functional occlusion in wax crown, bridge patterns, crown metal castings, and bridge metal castings.

Prerequisite(s): DLT 101 and 101LB.

Corequisite(s): DLT 201LB

Information: Consent of program director is required before enrolling in this course.

DLT 201LB Dental Laboratory I Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of DLT 201. Introduction to the principles and techniques used in the dental laboratory. Includes fabrication and articulation of removable die models, spruing, investing, and casting crown and bridge patterns. Also includes repairs, soldering, and functional occlusion in wax crown, bridge patterns, crown metal castings, and bridge metal castings.

Prerequisite(s): DLT 101 and 101LB.

Corequisite(s): DLT 201

Information: Consent of program director is required before enrolling in this course.

DLT 202 Dental Metallurgy**3 cr. hrs. 3 periods (3 lec.)**

Examination of metals currently used by the dental technician. Includes introduction to dental alloys (e.g. physical and chemical properties); weights, measures, and calculations; metal sensitivities and allergies. Also includes alloy processing; equipment calibration; metal treatment and torch techniques; electro-polisher and electrolyte solution operation; and safety procedures.

Prerequisite(s): DLT 101 and 101LB.

Information: Consent of program director is required before enrolling in this course.

DLT 203 Fixed Bridgework**1 cr. hrs. 1 periods (1 lec.)**

Construction of fixed single tooth restorations and bridgework. Includes prescriptions and work authorizations, fixed restoration design, and preparation requirements. Also includes waxing, seating, finishing, evaluation of fixed single tooth restorations, and bridgework castings.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 203LB

Information: Consent of program director is required before enrolling in this course.

DLT 203LB Fixed Bridgework Lab**3 cr. hrs. 9 periods (9 lab)**

This is the Lab portion of DLT 203. Construction of fixed single tooth restorations and bridgework. Includes prescriptions and work authorizations, fixed restoration design, and preparation requirements. Also includes waxing, seating, finishing, evaluation of fixed single tooth restorations, and bridgework castings.

Prerequisite(s): DLT 101 and 101LB, or concurrent enrollment.

Corequisite(s): DLT 203

Information: Consent of program director is required before enrolling in this course.

DLT 204 Dental Laboratory II**2 cr. hrs. 2 periods (2 lec.)**

Continuation of DLT 201. Principles and techniques used in the dental laboratory. Includes physics of light, color theory, edodontically treated teeth, reduction copings, attachments, application of dental attachments, swing lock retention for removable partial dentures, and semi precision attachment in a bridge.

Prerequisite(s): DLT 108, 201, 201LB, 202, 203, and 203LB.

Corequisite(s): DLT 204LB

Information: Consent of program director is required before enrolling in this course.

DLT 204LB Dental Laboratory II Lab**1 cr. hrs. 3 periods (3 lab)**

Continuation of DLT 201, this is the Lab portion of DLT 204. Principles and techniques used in the dental laboratory. Includes physics of light, color theory, endodontically treated teeth, reduction copings, attachments, application of dental attachments, swing lock retention for removable partial dentures, and semi-precision attachment in a bridge.

Prerequisite(s): DLT 108, 201, 201LB, 202, 203, and 203LB.

Corequisite(s): DLT 204

Information: Consent of program director is required before enrolling in this course.

DLT 206 Dental Ceramics**2 cr. hrs. 2 periods (2 lec.)**

Introduction to porcelain fused to metal techniques. Includes prescriptions and work authorizations; porcelain fused to metal restoration designs and preparation requirements; design, wax-up, and finishing of porcelain fused to metal substructure; metal conditioning; and building ceramic restorations. Also includes porcelain furnace operation, contouring fired porcelain, finishing, and soldering.

Prerequisite(s): DLT 108, 202, 203, and 203LB.

Corequisite(s): DLT 206LB

Information: Consent of program director is required before enrolling in this course.

DLT 206LB Dental Ceramics Lab**2 cr. hrs. 6 periods (6 lab)**

This is the Lab portion of DLT 206. Introduction to porcelain fused to metal techniques. Includes prescriptions and work authorizations; porcelain fused to metal restoration designs and preparation requirements; design, wax-up, and finishing of porcelain fused to metal substructure; metal conditioning; and building ceramic restorations. Also includes porcelain furnace operation, contouring fired porcelain, finishing, and soldering.

Prerequisite(s): DLT 104, 104LB, 108, 202, 203, and 203LB.

Corequisite(s): DLT 206

Information: Consent of program director is required before enrolling in this course.

DLT 207 Advanced Dental Laboratory Technology**2 cr. hrs. 2 periods (2 lec.)**

Application of dental laboratory techniques at the advanced level. Includes full dentures, partial dentures, crown and bridge, dental ceramics, and orthodontics.

Prerequisite(s): DLT 104, 104LB, 108, 202, 203, and 203LB.

Corequisite(s): DLT 207LB

Information: Consent of program director is required before enrolling in this course.

DLT 207LB Advanced Dental Laboratory Technology Lab**3 cr. hrs. 9 periods (9 lab)**

This is the Lab portion of DLT 207. Application of dental laboratory techniques at the advanced level. Includes full dentures, partial dentures, crown and bridge, dental ceramics, and orthodontics.

Prerequisite(s): DLT 104, 104LB, 108, 202, 203, and 203LB.

Corequisite(s): DLT 207

Information: Consent of program director is required before enrolling in this course.

Digital Arts

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DAR 101 Color Rendering and Theory**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Basic color theory and rendering principles as applied to digital and graphic design. Includes color types, definition and use of color schemes, rendering concepts and techniques, media, technique, composition, designing characters for animation, three-dimensional techniques and construction, and professional environment.

DAR 102 Fundamentals of Digital Design**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Overview of the fundamentals, theory, survey, and practice of digital arts design. Includes survey of industry careers, skills and processes necessary in digital design careers, digital arts software, and portfolio requirements in digital arts.

DAR 103 Introduction to Digital Video and Film Arts**3 cr. hrs. 3 periods (3 lec.)**

Overview of the theory and practice of the digital video and film arts industry. Includes various electronic media delivery systems, digital image, and target market and advertising.

DAR 111 Typography**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Letter forms and use in visual communications. Includes type rendering, letter spacing, type and headline groupings, type relationships, type images, and type applications.

Prerequisite(s): DAR 102 or 103.

DAR 112 Graphic Design**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Basic principles of color and design as applied to the graphics industry. Includes creating focal points, unity, texture, space relationships, color control, color harmonies, and psychology of color.

DAR 115 Digital Video Editing**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to non-linear editing on the computer. Includes historical development of editing, digital video and audio formats, techniques and theory of storytelling in editing, storytelling in various types, and organization for the edit.

Prerequisite(s): DAR 103 or concurrent enrollment.

DAR 120 Applied Computer Graphics**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to computer graphics software. Includes current software, postscript illustration documents, paint and photo editing documents, desktop publishing documents, and introduction to graphic design concepts.

DAR 122 DeskTop Graphics: Adobe Illustrator**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Computer generated graphics and illustrations. Includes current Adobe Illustrator software, computer graphics hardware, documents, and professional environment.

Prerequisite(s): DAR 120.

DAR 124 Writing for Film and Television**3 cr. hrs. 3 periods (3 lec.)**

Examining dramatic writing in visual mediums and creating the story for the screen. Includes story origins and formats, story structure, elements of story, preproduction, writing for alternative media, working in the film and television industry, writing processes, and criticism.

DAR 125 Digital Cinematography I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Principles and techniques of digital cinematography production. Includes digital video camera, camera and shooting competencies, lighting and composition, and working as a team.

Prerequisite(s): DAR 103 and 115 or concurrent enrollment.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 128 Digital Photography I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to digital photography emphasizing the technical and aesthetic issues and how these qualities form image content. Includes Adobe Photoshop basics, history of still photography, applications of digital cameras, aspects of the digital medium, camera and computer equipment requirements, digital still camera, memory and file formats, digital still camera lenses, and proper exposure. Also includes light, color, and temperature; depth of field, shutter speed effects, proper use of digital photography, lighting for digital stills, elements of composition, photographic rendering and reality, outputting and publishing, portfolio preparation, and career options in digital photography.

Recommendation: Adobe Photoshop experience is highly recommended before enrolling in this course.

Information: Same as ART 128. It is recommended students have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality computers, software, printers, lighting equipment, and studio will be provided for specific assignments. There will be additional supply costs beyond course fees.

DAR 140 Digital Arts Illustration Studio: Illustration Technique & Media**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Basic principles, techniques and media applied to digital and traditional illustration styles, subject matter used in print illustration. Includes subject, media, technique, composition, and professional environment.

Prerequisite(s): DAR 101.

DAR 145 Digital Arts Illustration Studio: Char Dev for Animation & Print**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Principles and techniques applied to character development used for animation, products, and print material. Includes drawing in a loose manner, designing characters, materials, techniques and construction, various applications, and professional environment.

Prerequisite(s): DAR 101.

DAR 146 Lighting for Photography I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to creative professional lighting concepts and techniques for commercial and fine art photography. Includes lighting and studio equipment, light qualities, lighting for form, lighting for surface qualities, still-life photography, portrait photography, image composition, critical analysis, and portfolio.

Prerequisite(s): ART/DAR 128.

Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, computers and software, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees. Same as ART 146.

DAR 173 History of American Cinema**3 cr. hrs. 3 periods (3 lec.)**

American cinematic film making as an art form, a global cultural influence, economic force in America and internationally, and a system of production and distribution. Includes history of American cinema, development of classical Hollywood style and world-wide storytelling on film, cinema genres, alternative American films, analysis and criticism, and film production teams.

DAR 175 The Art of Digital Cinematography**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Basic techniques of the art of digital cinematography. Includes storyboarding and vision of the story, camera considerations, light and image in production, post-production techniques, different genres, and the production team.

Prerequisite(s): DAR 103 and 115 or concurrent enrollment, in both.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 176 Digital Animation**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to digital animation techniques. Includes history of art animation, procedures in animated films, producing animation, character design and movements, technical information, storyboarding, animation techniques, basic principles of animation, and creation of a digital animation project.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 196 Digital Arts Independent Projects: Media Projects**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Students independently continue their development in media communications with the help of a faculty member.

Prerequisite(s): DAR 103, 124, 125, 175.

Information: Consent of instructor is required before enrolling in this course. May be taken three times of a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DAR 205 Lighting for Film and Video**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Creative lighting techniques, practices, and use of equipment. Includes the visible spectrum, film and exposure, using electricity, video and the electronic medium, controlling color temperature, light quality, and measuring light intensity. Also includes manipulating light, light concepts in practice, and light in the studio and on location.

Prerequisite(s): DAR 125 or 175.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 210 Digital Arts Design Studio: Advertising Design**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Principles and techniques as applied to advertising design. Includes advertising concepts, advertising campaign, and professional environment.

Recommendation: Completion of DAR 112 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DAR 211 Digital Arts Design Studio: Product Design**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Principles and techniques as applied to product design. Includes package design, card design, textile design, compact disc (CD) design, digital video disc (DVD) design, game design, and sign design.

Prerequisite(s): DAR 112.

DAR 212 Digital Arts Design Studio: Collateral Design**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Principles and techniques for creating collateral print designs such as brochures, booklets, presentation kits, postcards, logos, stationery, posters, menus, and other printed materials. Includes layout of flat print materials, layout and design of folded print materials, mock-up construction techniques, and professional environment.

Recommendation: Completion of DAR 112 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DAR 217 Post Production for Film**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to film post production video and audio techniques and aesthetics of film editing. Includes history of the art of film editing, preparing for the edit, tools of the editor, cutting techniques, and preparing for sound. Also includes sound, dialogue, looping, and music editing; the mix; and the answer print.

Prerequisite(s): DAR 125.

DAR 221 Photo Image Editing: Adobe PhotoShop**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Computer retouching and manipulation of photos and illustrations. Includes current Adobe PhotoShop software, edit and retouch, hardware, and professional environment.

Prerequisite(s): DAR 120.

Information: Experience in computer graphics may be substituted for prerequisites. See a Digital Arts faculty member for information.

DAR 224 Advanced Screenwriting**3 cr. hrs. 3 periods (3 lec.)**

In-depth examination of writing in visual mediums. Includes writing workshops, planning feature length screenplays, alternative writing processes, contemporary scripts and screenwriters, mythic archetypes, creative deconstruction, finding representation, and current trends in the screenwriting industry.

Prerequisite(s): DAR 103 and 124.

Information: Experience in computer graphics may be substituted for some prerequisites. See a Digital Arts faculty member for information.

DAR 225 Digital Cinematography II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of DAR 125. Production of digital video projects. Includes analyzing the needs in a post-production plan, story and visual elements, production equipment needs, lighting the digital video production, in camera and post production special effects, editing and the visual storyline, and building a demo reel.

Prerequisite(s): DAR 124 and 125.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 226 DeskTop Publishing for Digital Arts: Adobe InDesign**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Design and creation of publications and printed collateral for digital arts. Includes current Adobe InDesign software, documents, printing preparation, and professional environment.

Prerequisite(s): DAR 120.

Information: Experience in computer graphics may be substituted for some prerequisites. See a Digital Arts faculty member for information.

DAR 230 Production Techniques for Print**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Preparation of artwork for printing. Includes production workflow using Adobe Illustrator, Adobe Photoshop, and Adobe InDesign; trim, bleed, color, and special finishes; paper stock and budget, single and multi-page documents, and terminology and communicating with print shops.

Prerequisite(s): DAR 122, 221, and 226 or concurrent enrollment.

DAR 232 Digital Photography II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of ART/DAR 128. Includes intermediate digital cameras with manual functions, intermediate digital darkroom and digital output, quality of light, intermediate image composition, multiple images, intermediate portfolio development, and critical analysis. Also includes the intermediate use of state-of-the-art professional quality computers and image processing software, professional digital cameras, printers, and a lighting studio with professional lighting equipment.

Prerequisites(s): ART/DAR 128.

Recommendation: Completion of DAR 221 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as ART 232. The prerequisite may be waived with consent of the instructor. It is recommended students have access to a digital camera with manual exposure control and a computer with image processing software. Professional photographic equipment, including cameras, are available for check out on a rotating basis. Professional quality computers, software, printers, lighting equipment and studio will be provided for specific assignments. There will be additional supply costs beyond course fees.

DAR 240 Digital Arts Illustration Studio: Book Illustration**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Principles and techniques applied to various book, graphic novel and comic magazine illustration. Includes advanced subjects, media, techniques, various applications, and professional environment.

Prerequisite(s): DAR 101.

DAR 246 Lighting for Photography II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of ART/DAR 146. Includes lighting and equipment for studio and location, advanced lighting qualities and techniques, photographing with mixed light sources, lighting for mood and environment, set design and construction, photographing individuals and groups of people, photographing on location, photographing for montage images, advanced image composition, critical analysis, business practices, and portfolios.

Prerequisite(s): ART/DAR 146.

Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, computers and software, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees. Same as ART 246.

DAR 250 Computer 2D Animation: Adobe After Effects**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Two dimensional animation on the computer. Includes storyboards, techniques and terms, logo animation, character animation, metamorphic animation, and production techniques.

Recommendation: Completion of DAR 221 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

DAR 251 Computer 3D Animation: Maya**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Beginning modeling, rendering, and animation on the computer using Maya, may include other current industry software. Includes menus, image creation, color, printing, precision model making, object creation and design, and compatibility.

Recommendation: Completion of DAR 221 or 250 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets CTE - A&H.

DAR 252 Interactive Design I**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Interactive Design I Introduction to the theory, survey, and practice of designing and developing beginning interactive applications. Includes design for current formats, design and development planning, core concepts of Animate software, HyperText Markup Language (HTML) 5 concepts, and application development. Also includes adding media to projects, core visual aesthetics, business considerations, and publishing.

Prerequisite(s): DAR 120.*Information:* Prerequisites may be waived with experience in computer graphics. See a Digital Arts faculty member for information.*Gen Ed:* Meets AGEC - FA; Meets CTE - A&H.**DAR 254 Interactive Design II****4 cr. hrs. 5 periods (3 lec., 2 lab)**

Continuation of DAR 252. Introduction to the theory, survey, and practice of designing and developing advanced interactive applications. Includes current multimedia formats and funding options, storyboarding interactive projects, advanced online design concepts of Animate, HyperText Markup Language (HTML) 5 concepts, and advanced application development. Also includes simple graphics and animations, advanced visual aesthetics, business and legal considerations; and publishing, marketing, and distribution.

Prerequisite(s): DAR 252.**DAR 256 Web Design****4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to the theory, survey, and practice of designing and developing beginning website and application interfaces. Includes building websites, creating a static website with Dreamweaver, creating a dynamic website with WordPress, HyperText Markup Language (HTML), Cascading Style Sheets (CSS), JavaScript, web applications, web content, uploading websites, and web standards.

Prerequisite(s): DAR 221 or concurrent enrollment.**DAR 257 Advanced Web Design****4 cr. hrs. 5 periods (3 lec., 2 lab)**

Theory, survey, and practice of designing and developing advanced website and application interfaces. Includes using basic Hypertext Preprocessor (PHP), designing and adding content to a MySQL database, creating a WordPress theme; using advanced HyperText Markup Language (HTML) Cascading Style Sheet (CSS), and JavaScript code; formatting multimedia content, and best practices in web design.

Prerequisite(s): DAR 221 and 256.**DAR 258 Advanced Computer 3D Animation: Maya****4 cr. hrs. 5 periods (3 lec., 2 lab)**

Advanced modeling, rendering, and animation utilizing high end character 3D software. Includes a review of 3D basics, advanced modeling, animation, and surfacing techniques, advanced lighting and camera effects, and kinematics and contortions.

Prerequisite(s): DAR 251.**DAR 259 Mobile Application Design****4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to the survey and practice of designing and developing mobile applications. Includes online marketing, analytics, the effects of emerging technologies on modern cultures, and case studies.

Prerequisite(s): DAR 256.**DAR 275 Basic Audio Production****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Fundamental tools, techniques, and procedures for multi-track recording. Includes elements of sound, sound studios, consoles, digital recorders, microphone application, and technical planning and sound design. Also includes on location versus studio recording, mixing and re-recording, and editing.

Information: This course will require additional expenses for supplies in addition to course and lab fees.**DAR 285 Documentary Television and Film****4 cr. hrs. 6 periods (2 lec., 4 lab)**

Fundamentals of nonfiction film/video production. Includes history of documentary production, European vs. American documentary makers, operating the camera, film and video techniques, television themes, production of a television documentary, and location problems.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 286 Digital Cinematography Capstone**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Tools, techniques, and procedures involved in professional film production. Includes pre-planning a digital video production, script breakdown, pre-production and post-production, budgeting, distribution, promotion, and developing a prospectus.

Prerequisite(s): DAR 115, 124, and 175.

Information: This course will require additional expenses for supplies in addition to course and lab fees.

DAR 288 Digital Arts Business and Portfolio Capstone**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Production of professional quality digital arts portfolio with a focus on extended, in-depth study of the digital art industry and work environment. Includes professional design relationships, current digital arts tools and processes, interviews, and presentation of portfolios.

Prerequisite(s): DAR 112, 122, 221, and 226.

DAR 290E2 Digital Video and Film Arts Internship**3 cr. hrs. 15 periods (15 lab)**

Work environment in digital video and film arts. Includes interpersonal communication, professional development, employment strategies, and field experience.

Prerequisite(s): DAR 103, 124, 125, and 175.

Information: Consent of the video and film arts instructor and 12 credit hours of DAR course work is required to be placed in an internship position.

DAR 290E3 Internship in Digital Arts/Graphics**3 cr. hrs. 15 periods (15 lab)**

Work environment in digital arts/graphics field. Includes interpersonal communication, professional development, employment strategies, and field experience.

Prerequisite(s): DAR 101, 111, and 112.

Information: Consent of the digital arts/graphics instructor or department chair and 12 credit hours of DAR coursework is required to be placed in an internship position.

DAR 296 Digital Arts Independent Projects**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes defining a project, tools and medium, conceptualize and execute a project, professional environment, and complete and critique the project.

Information: May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

DAR 296I1 Digital Arts Independent Projects: Design**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes establishing objectives, procedures and a method of evaluation.

Information: May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

DAR 296I2 Digital Arts Independent Projects: Illustration**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes establishing objectives, procedures and a method of evaluation.

Information: May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

DAR 296I3 Digital Arts Independent Projects: Desktop Publishing**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes establishing objectives, procedures, and a method of evaluation.

Information: May be taken four times for a maximum of sixteen credit hours. May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

DAR 29614 Digital Arts Independent Projects: Interactive Design**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes establishing objectives, procedures, and a method of evaluation.

Information: May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

DAR 29618 Digital Art Independent Proj: Adv Digital Video/Audio/Film**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Students independently continue their development in digital video, audio, and film media with the help of a faculty member.

Information: May be taken three times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. **Information:** Completion of twelve credit hours of DAR courses, DAR 196, and consent of instructor is required before enrolling in this course.

DAR 297 Digital Arts Seminar**.25-4 cr. hrs. .25-4 periods (.25-4 lec.)**

Digital Arts job-related training. Includes presentations and development of skills in a given area. May include special topics of timely or limited interest. Course content may be delivered all, or in part, via the web.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Early Childhood Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ECE 100 Introduction to the Child Care Profession**2 cr. hrs. 2 periods (2 lec.)**

Comprehensive employment preparation for clients referred by the Department of Economic Security (DES) and other individuals interested in the field of child care. Includes child development; positive discipline and guidance; language, literacy, math, and science development; and learning environments. Also includes licensing, health and safety, nutrition, children with disabilities, and handling child abuse.

ECE 107 Human Development and Relations**3 cr. hrs. 3 periods (3 lec.)**

Analysis of the elements that affect growth and development throughout the human life span. Includes theories and global perspectives, prenatal development, oral language development, development within domains, parenting styles, death and dying, local and community influences, and theories in action.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECE 108 Literature/Social Studies for Children**3 cr. hrs. 3 periods (3 lec.)**

Survey of principles, materials, and techniques for the selection and evaluation of children's literature and social studies materials. Includes history of children's literature, resources, evaluation, use of appropriate materials, alignment with social studies standards, connections with language development in the early years, and developmentally appropriate practices.

Information: In order to be successful in all ECE courses, students must have college-level reading and writing skills.

ECE 115 Supervision and Administration of Early Childhood Programs**3 cr. hrs. 3 periods (3 lec.)**

Analysis of elements for planning, implementing, maintaining, and evaluating early childhood education programs. Includes program assessment, philosophy and mission statements, basic business operations, ethics, engaging stakeholders, regulating agencies, and child advocacy.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: In order to be successful in all ECE classes, students must have college-level reading and writing skills.

ECE 117 Child Growth and Development**3 cr. hrs. 3 periods (3 lec.)**

Analysis of the elements which affect growth and development pre-birth to age eight. Includes developmental theorists, roles of genetics, health and social influences, public policy issues, and domains of development.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECE 118 Foundations of Early Childhood Education**3 cr. hrs. 3 periods (3 lec.)**

A survey of the historical and philosophical foundations of early childhood education. Includes historical and contemporary influences; pedagogy; agency management of early childhood programs; early childhood assessment; and professional responsibilities.

Information: CDA 102, 121, and 271 together constitute ECE 118. Students must have college-level reading and writing skills to be successful in ECE courses.

ECE 124 Math and Science for Children**3 cr. hrs. 3 periods (3 lec.)**

Theories, methods, and techniques for teaching math and science. Includes central concepts in math and science, communication skills, assessment, integration into other subject areas, teaching methods, and developmentally appropriate practices.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: All ECE courses require college-level reading and writing skills. This course replaces CDA 142, CDA 143, and CDA 152.

ECE 125 Nutrition, Health, and Safety for the Young Child**3 cr. hrs. 3 periods (3 lec.)**

In-depth study of the health, safety and nutritional needs of children. Includes children's nutritional needs, caregiver responsibilities, food allergies, promoting healthy attitudes, illness prevention, record keeping, promotion of health and safety, safe environments, and community resources.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: All ECE classes require college-level reading and writing skills. This course replaces CDA 104, CDA 119, and CDA 151.

ECE 129 Infant and Toddler Education**3 cr. hrs. 3 periods (3 lec.)**

Examination of effective teaching and guidance practices during infant and toddler years. Includes theory, relationships, assessment, curriculum, guidance, and professionalism in the context of providing education and care for the infant and toddler.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: Students must have college-level reading and writing skills to be successful in all ECE classes.

ECE 136 Early Childhood STEAM**2 cr. hrs. 2 periods (2 lec.)**

Theories, methods, and techniques for teaching science, technology, engineering, art, and math to young children. Includes central concepts in math, science, technology, arts, and engineering vocabulary and connections, integration into subject areas, teaching methods, and developmentally effective practices with young children.

Information: All ECE courses require college-level reading and writing skills.

ECE 211 Inclusion of Young Children with Special Needs**3 cr. hrs. 3 periods (3 lec.)**

Overview of the exceptional learner (birth to age 8). Includes educational implications and service delivery, public policy, identification and assessment, specific areas of exceptionality, service plans and delivery approaches, and support systems for families.

Information: This course replaced ECE 111. Either ECE 111 or 211 will meet the graduation requirement. All ECE courses require college-level reading and writing.

ECE 226 Positive Child Guidance**3 cr. hrs. 3 periods (3 lec.)**

Introduction to theory and application of early childhood classroom planning, guidance techniques and classroom management. Includes application of developmental theories, developmentally appropriate practices, behavior management, cultural implications, teaching practices, and reflection.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: Includes a 6-hour practicum. In order to be successful in all ECE classes, students must have college-level reading and writing skills.

ECE 228 The Young Child: Family, Culture, and Community**3 cr. hrs. 3 periods (3 lec.)**

Examination of the influences of family, culture and community on the development and learning of young children. Includes development of personal framework for understanding cultures; cultural differences in attitudes about play; age and cultural appropriateness of classroom materials; cross-cultural communication techniques; techniques for utilizing family strengths; strategies for involving families in the school and classroom; strategies for developing flexible response practices; and community project development.

Prerequisite(s): ECE 117, completed with a grade of c or better.

Information: A one-hour practicum that focuses on early learning grades is part of the learning in this course. This course replaced ECE 128. Either ECE 128 or 228 will meet the graduation requirement. In order to be successful in all ECE classes, students must have college-level reading and writing skills.

ECE 240 Assessment of Young Children**3 cr. hrs. 3 periods (3 lec.)**

Assessment techniques associated with the evaluation of young children. Includes observation methods, interpreting assessment data, legal and ethical issues related to assessment, methods and strategies, and application of assessment data.

Prerequisite(s): ECE 117 and 118 completed with a C or better. CDA 102, 121, and 271 together can be used instead of ECE 118.

Information: In order to be successful in all ECE classes, students must have college-level reading and writing skills.

ECE 245 Integrating Learning and Lesson Planning through the Arts**3 cr. hrs. 3 periods (3 lec.)**

Survey of principles, materials, techniques, and resources for teaching music/art to children. Includes selection of appropriate materials and activities, integration with basic child development ages/stages, creation of the appropriate environment, integration with other subject areas, and role of the teacher.

Prerequisite(s): ECE 117, completed with a grade of C or better.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.

ECE 246 Integrating Learning and Lesson Planning: Literacy**3 cr. hrs. 3 periods (3 lec.)**

Study of oral and written language acquisition and emergent literacy. Includes developmental theories, language integration, language rich environments, children's literature, and family involvement. Also includes selection of appropriate materials and activities, integration with basic childhood development ages/stages, creation of the appropriate environment, integration with other subject areas, and role of the teacher.

Prerequisite(s): ECE 117, 118, 226, and 228, completed with a C or better. CDA 102, 121, and 271 together can be used instead of ECE 118.

Information: An approved child development course may be used in place of ECE 117. ECE 245 taken fall 2014-summer 2015, or ECE 110 (or ECE 110A and ECE 110B), or ECE 112 is considered to be the equivalent of this course. Students must have college-level reading and writing skills to be successful in ECE courses.

ECE 292 Early Childhood Education: Theory to Practice**4 cr. hrs. 16 periods (1 lec., 15 lab)**

Practical experience in early child care and education. Includes developmentally appropriate practices, evaluation techniques, portfolio development, child advocacy, and self-evaluation. Also includes observation, assessment, documentation techniques, and 100 hours of documented work with children birth through prekindergarten.

Prerequisite(s): ECE 115, 117, 118, 225, 226, 228, 240, and 246, completed with a C or better. CDA 102, 121, and 271 together can be used instead of ECE 118.

Information: An approved child development course may be used in place of ECE 117. Consent of instructor or program coordinator before enrolling in this course. A fingerprint clearance card, TB test, and certain immunizations are required. Students must have college-level reading and writing skills to be successful in ECE courses. Prerequisites will be waived for students who have achieved a passing score on the Arizona Educator Proficiency Assessment test #36 (Early Childhood Education) and test #93 (Professional Knowledge-Early Childhood).

Economics

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ECN 150 An Economic Perspective

3 cr. hrs. 3 periods (3 lec.)

The study of the interactions of individuals and societies from the viewpoint of economics. Includes the philosophy of economics, the history of economic thought, conventional economic theory, questions of equity versus efficiency, contemporary economic issues, microeconomics, macroeconomics, the individual and our democracy.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

ECN 150HC An Economics Perspective: Honors

3 cr. hrs. 3 periods (3 lec.)

The study of the interactions of individuals and societies from the viewpoint of economics. Includes introduction to economics, conventional economic theory, economic policies and diverse populations, contemporary microeconomic and macroeconomic issues, and practical applications in relation to civic engagement. Also includes additional Honors content.

Information: Must qualify for Honors program and obtain instructor or advisor/counselor approval to register for this course. Honors Content: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources; a high quality, peer reviewed paper or project in a format appropriate for the discipline; presentation of research, in class or to a wider audience.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

ECN 201 Microeconomic Principles

3 cr. hrs. 3 periods (3 lec.)

The study of individual markets, which is where supply meets demand and prices and quantities are determined. Includes an examination of the production possibilities curve, market analysis, consumer theory, theory of the firm, conclusions, and contemporary microeconomic issues.

Recommendation: MAT 092. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECN 201HC Microeconomics Principles: Honors

3 cr. hrs. 3 periods (3 lec.)

The study of individual markets, in which supply meets demand and prices and quantities are determined. Includes an examination of the production possibilities curve, market analysis, consumer theory, theory of the firm, conclusions, and contemporary microeconomic issues. Also Includes additional Honors content.

Recommendation: MAT 092.

Information: Must qualify for Honors program and obtain instructor or advisor/counselor approval to register for this course. Honors Content: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources; a high quality, peer reviewed paper or project in a format appropriate for the discipline; presentation of research, in class or to a wider audience.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECN 202 Macroeconomic Principles

3 cr. hrs. 3 periods (3 lec.)

The study of the economy as a whole. Includes an examination of the production possibilities curve, market analysis; definitions of gross domestic product, inflation, and unemployment; fiscal policy, monetary policy; and contemporary macroeconomic principles.

Recommendation: MAT 092. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECN 202HC Macroeconomics Principles: Honors**3 cr. hrs. 3 periods (3 lec.)**

The study of the economy as a whole. Includes the production possibilities curve, market analysis; definitions of gross domestic product, inflation, and unemployment; fiscal policy, monetary policy; and contemporary macroeconomic issues. Also includes additional Honors content.

Recommendation: MAT 092. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

ECN 296 Independent Study in Economics**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Independent study projects or special interest areas in economics under the supervision of a faculty member.

Prerequisite(s): ECN 201 and 202.

Information: May be taken two times for a maximum of six credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

EDU 200 Introduction to Education**3 cr. hrs. 3 periods (3 lec.)**

Provides students with an introductory overview of Education. Includes purposes of schools and schooling; characteristics of effective schools; diversity and its effects on schools, teachers, and students; social problems affecting schools; comparative education; curriculum issues and controversies; and technology's impact on schools and schooling. Also includes philosophical, legal, and financial issues facing today's schools; history of American education; and current trends in education reform.

EDU 201 Diversity in Education**3 cr. hrs. 3 periods (3 lec.)**

Exploration of diversity represented in the school community, including culture, language, ethnicity, socio-economic status, ability, age, sexual orientation, and lived experiences. Includes factors that impact educational practices, shape our educational system, and influence student achievement. Also includes the application of knowledge of diversity to the teaching/learning process and the facilitation of positive interactions within the learning community; the development of collaborative relationships; and the support of student development and well-being.

EDU 202 Introduction to the Exceptional Learner**3 cr. hrs. 3 periods (3 lec.)**

Foundations of special education, encompassing the characteristics of students with exceptionalities, laws governing special education, the role of the teacher working with exceptional learners, Individual Education Plans (IEPs), and the Special Education process. Includes current educational practices and theories related to instruction, classroom management, and assessment in special education. Also includes collaboration and communication supporting the success of students with exceptionalities.

EDU 206 Relationships in Classroom Settings**3 cr. hrs. 3 periods (3 lec.)**

Introduction to basic classroom management principles. Includes management of curriculum, instruction, the physical environment, psychosocial factors, student motivation, and special groups. Also includes a focus on disruptive family involvement, managing student behavior, communication, stress management, and appropriate record keeping.

Information: This class requires 60 hours of volunteering in a local K-12 school. Students must select their site by the first EDU206 class session and must have a fingerprint clearance card and background check before participation. This process could take four weeks (students should check with the school district where they will be volunteering for details).

EDU 241 Middle School Curriculum and Instruction**3 cr. hrs. 3 periods (3 lec.)**

Concepts, skills and research techniques for middle school teachers. Examination of constructivism, research, curriculum development and instruction, unit planning, assessment and evaluation, materials selection, teaching strategies, diversity, motivation and classroom management.

Information: Education department approval is required before enrolling in this course. Post-Degree Teacher Certification Program approval is required before enrolling in this course. This class requires a 10-hour practicum. Meets Middle School Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.

EDU 246 Assessment of ESL Students**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the assessment of English as a Second Language (ESL) students, including knowledge of assessment, purposes of assessment, identification, placement, exit standards for students, linking assessment to instruction, and creating classroom assessments.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This class requires a 10-hour practicum. May be taken for Professional Development purposes.

EDU 255 Content Area Reading Middle and Secondary Schools/Practicum**3 cr. hrs. 3 periods (3 lec.)**

Information and strategies in content area literacy and its fundamental role in instruction across the curriculum. Topics include: overview of content area literacy; active learning in the reading and writing process; comprehension, vocabulary, and study skill strategies; the role of literature in the content areas: writing as a tool for content area comprehension; assessment strategies and technology.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This class requires a 10-hour practicum and can be used to fulfill some elements of the Reading Endorsement. Please contact the Post-Degree Teacher Education office or contact the Arizona Department of Education Certification office for specific information.

EDU 268 Issues in Education**1 cr. hrs. 1 periods (1 lec.)**

Special topics in education with an emphasis on current issues. Includes issues and concepts relating to the National Board for Professional Teaching, standards, and future teaching practices. Also includes student learning, personal motivation, lesson plan development, behavior and ethics, and professional portfolio.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDU 270 Educational Technology and Curriculum Integration**3 cr. hrs. 3 periods (3 lec.)**

Introduction to topics and issues in educational technology. Includes electronic communications, basic productivity applications, computer system basics, multimedia and educational courseware and technology integration into the curriculum. Also includes planning for and evaluating educational technology, security, ethics and other issues in technology, and emerging technologies in education.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.

EDU 271 Introduction to Teaching**3 cr. hrs. 3 periods (3 lec.)**

Introduction to teaching for the prospective teacher focusing on the major models of teaching, the purposes served and the curriculum methods employed with each model. Also includes legal and ethical issues, teaching as a profession, and strategies and practices for increasing instructional effectiveness.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.

EDU 272 Educational Psychology**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the basic principles of educational psychology relating to the areas of physical, psychological, moral, social and cognitive development. Includes personal and social development, cognitive processes in the classroom, behaviorism, constructivism, learning theorists, and assessment.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.

EDU 273 Introduction to Special Education**3 cr. hrs. 3 periods (3 lec.)**

Introduction to a variety of instructional, classroom management and assessment strategies pertinent to teaching in a special education program. Includes role and function of the special education teacher, preparing for instruction, constructing lesson plans, assessment, instruction, classroom management, instructional media learning tools, and special education compliance.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires a 10-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

EDU 275 Classroom Management**3 cr. hrs. 3 periods (3 lec.)**

Mastery of the knowledge and skills necessary to create and maintain a positive classroom environment. Includes overview of classroom management, students' basic needs, creating positive interpersonal relationships, creating positive peer relationships, working with parents and student motivation and learning. Also includes developing standards for classroom behavior, responding to violations of rules and procedures, using problem solving techniques, developing individual behavior plans, and school- wide student management programs.

Information: Post-Degree Teacher Certification Program or Education Department approval is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.

EDU 276 Foundation of Reading Instruction**3 cr. hrs. 3 periods (3 lec.)**

Literacy instruction at the elementary school level. Includes literacy development theory; literacy development at the preschool, early childhood and intermediate grade level; instruction techniques for all facets of literacy development; and comprehension strategies, including bilingual learners and special populations. Also includes focus on organizing the classroom and curriculum to enhance literacy development, techniques and assessment as tools for instruction and working with parents to enhance student achievement.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This class requires a 15-hour practicum and can be used to fulfill some elements of the Reading Endorsement. Please contact the Post-Degree Teacher Education office or contact the Arizona Department of Education Certification office for specific information. Requires a paid subscription to TaskStream electronic portfolio.

EDU 277 Phonics Instruction in a Balanced Literacy Setting/Practicum**3 cr. hrs. 3 periods (3 lec.)**

Overview and exploration of phonemic awareness, phonics instruction and related research findings. Includes quality literacy programming, understanding language and words, word study about letters and words, and thinking comprehensively.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This class requires a 15-hour practicum and can be used to fulfill some elements of the Reading Endorsement. Please contact the Post-Degree Teacher Education office or contact the Arizona Department of Education Certification office for specific information. Requires a paid subscription to TaskStream electronic portfolio.

EDU 278 Elementary Science Methods and Curriculum Development**3 cr. hrs. 3 periods (3 lec.)**

Overview of the content and instructional methods of teaching science in kindergarten through eighth grade. Includes the academic content of teaching science, the instructional methods of teaching science, practical application, and observation and evaluation.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

EDU 279 Elementary Math Methods and Curriculum Development**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the content and methods of curriculum development in elementary math for the elementary and middle school teacher. Includes standards, resources, teaching math concepts, cooperative learning, topics, teaching aids, activity lessons, integrating mathematics lessons with other disciplines, and presenting a lesson.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

EDU 280 Social Studies Methods and Curriculum Development**3 cr. hrs. 3 periods (3 lec.)**

Overview of the content and methodology of teaching social studies in kindergarten through eighth grade. Includes the social studies academic content, methods of teaching social studies instruction, and evaluation.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

EDU 285 Secondary Teaching Methods**3 cr. hrs. 3 periods (3 lec.)**

Introduction to a variety of relevant secondary instructional, classroom management, and assessment strategies. Includes the role and function of the teacher in a secondary classroom setting, preparing for instruction, developing lesson plans, designing assessments, delivering instruction, managing the classroom, working with instructional media, and assisting special needs students.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

EDU 290 Internship**8 cr. hrs. 40 periods (40 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation; and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education department approval before enrolling in this course. EDU 290A, 290B, 290C and 290D together constitute EDU 290.

EDU 290A Internship I**2 cr. hrs. 10 periods (10 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation; and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio completion, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education department approval before enrolling in this course. EDU 290A, 290B, 290C and 290D together constitute EDU 290.

EDU 290B Internship II**2 cr. hrs. 10 periods (10 lab)**

Continuation of EDU 290A, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation; and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio completion, teamwork and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education department approval prior to registration. **Information:** EDU 290A, 290B, 290C and 290D together constitute EDU290.

EDU 290C Internship III**2 cr. hrs. 10 periods (10 lab)**

Continuation of EDU 290B, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation; and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio completion, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education department approval prior to registration. EDU 290A, 290B, 290C and 290D together constitute EDU 290.

EDU 290D Internship IV**2 cr. hrs. 10 periods (10 lab)**

Continuation of EDU 290C, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation; and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio completion, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education department approval prior to registration. EDU 290A, 290B, 290C, and 290D together constitute EDU 290.

Education-General/Post Degree

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

EDC 240 Adolescent Development**3 cr. hrs. 3 periods (3 lec.)**

Exploration of adolescence from early to young adulthood. Includes physical, social, moral, and cognitive development as seen from diverse cultural perspectives and taking into consideration socioeconomic, educational, and risk-taking factors. Also included is how these factors dynamically impact each other and future career choices for adolescents. requirements in conjunction with other coursework.

Information: This course requires a 10-hour practicum. Meets the Fitness and Sports Sciences Coaching Certificate (now inactive) requirements in conjunction with other coursework.

EDC 250 Introduction to Teaching**3 cr. hrs. 3 periods (3 lec.)**

Introduction to teaching as a profession in the United States educational system. Includes professional teaching standards, school governance, and various perspectives on education (including historical, philosophical, social, legal, and ethical issues). Also includes an introduction to lesson planning, data literacy, and school culture and climate.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as ESE 250.

EDC 251 Educational Psychology**3 cr. hrs. 3 periods (3 lec.)**

Overview of how children develop (physically, psychologically, socially, and cognitively) and the ways in which this information guides instruction. Includes theories of how learning is constructed and describes various factors that impact learning, such as student differences, motivation, engagement, classroom management, differentiated instruction, metacognition, assessment, and teacher self-reflection.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as ESE 251.

EDC 252 Survey of Exceptional Education**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the field of Exceptional Education. Includes history and current laws; special education processes and procedures; effective communication; techniques for collaboration and consultation with general and special education teachers and parents; and characteristics of students with exceptionalities. Also includes current and relevant trends in special education, technology, and effective instructional strategies and resources that meet the needs of learners with exceptionalities.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as ESE 252.

EDC 254 Classroom Management: Elementary**3 cr. hrs. 3 periods (3 lec.)**

Overview of classroom management styles and strategies that support student engagement and achievement in grades 1-8. Includes learner differences, motivation, interpersonal relationships, teacher expectations, communication, and collaboration. Also includes organizational strategies, procedures, routines, current trends and restorative practices.

Prerequisite(s): EDC 250 and 251.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 256 Classroom Management: Secondary**3 cr. hrs. 3 periods (3 lec.)**

Overview of classroom management styles and strategies that support student engagement and achievement in grades 7-12. Includes learner differences, motivation, interpersonal relationships, teacher expectations, communication, and collaboration. Also includes organizational strategies, procedures, routines, current trends and restorative practices.

Information: Post Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 257 21st Century Learning**3 cr. hrs. 3 periods (3 lec.)**

Introduction to strategies, tools, and resources for teaching in today's classrooms. Includes K-12 content standards, instructional objectives, lesson planning, data literacy, and 21st century skills. Also includes benefits and challenges of technology integration and functions of technology.

Information: Post Degree Teacher Certification Program approval is required before enrolling in this course. Same as ESE 257.

EDC 266 Internship Practicum**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Overview of the intern experience in a grades K-12 Educator Preparation Program (EPP) internship classroom. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, collaboration, and education laws.

Information: Admission to the Post-Degree Teacher Certification Program and EPP Internship approval are required before enrolling in this course. May be taken two times for a maximum of four credits; if this course is repeated, see a financial aid advisor or Veteran's Affairs advisor to determine funding eligibility as appropriate.

EDC 267 Traditional Practicum**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Effective teaching strategies in an appropriate K-12 practicum placement with an experienced teacher. Includes classroom management, instructional strategies, lesson planning, assessment, differentiation, collaboration, and educational technologies.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. This course requires 32 hours of practicum placement in a K-12 classroom.

EDC 270 Elementary Methods: English Language Arts**3 cr. hrs. 3 periods (3 lec.)**

Emphasizes the application of theories, methods, and techniques for teaching English Language Arts (ELA) and Literacy in grades 1-8. Includes standards-based instruction, elements of effective instruction, differentiation, 21st century skills, technology, and assessment.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 271 Elementary Methods: Math**3 cr. hrs. 3 periods (3 lec.)**

Emphasizes the application of theories, methods, and techniques for teaching Mathematics in grades 1-8. Includes standards-based instruction, elements of effective instruction, differentiation, 21st century skills, technology, and data literacy.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 272 Elementary Methods: Reading/Phonics**3 cr. hrs. 3 periods (3 lec.)**

Overview of reading and phonics instruction at the elementary level (grades 1-8). Includes developmental stages of literacy and strategies for teaching phonics, phonemic awareness, vocabulary, decoding, fluency, and reading comprehension. Emphasizes the use of various assessment tools to analyze miscues, diagnose learner needs, guide planning, and differentiate instruction.

Prerequisite(s): EDC 270.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 273 Elementary Methods: Science/Social Studies**3 cr. hrs. 3 periods (3 lec.)**

Emphasizes the application of theories, methods, and techniques for teaching Science and Social Studies (SS) in grades 1-8. Includes standards-based instruction, inquiry learning, problem-based learning, strategies to increase student engagement, 21st century learning, and digital technologies for Science and Social Studies instruction.

Prerequisite(s): EDC 270 and 271.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 274 Elementary Methods: Instruction Across the Curriculum**3 cr. hrs. 3 periods (3 lec.)**

Instructional methods for organizing and integrating Literacy and Math across the elementary curriculum. Includes interdisciplinary teaching strategies, inquiry learning, formative and summative assessment, unit planning, lesson planning, and technology integration. Also includes writing instruction and assessment.

Prerequisite(s): EDC 270 and 271.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 275 Secondary Methods: English Language Arts/Social Sciences**3 cr. hrs. 3 periods (3 lec.)**

Instructional methods in English Language Arts (ELA) and Social Sciences (SS) for the secondary teacher. Includes considerations in instructional design and assessment such as standards-based lessons and objectives; instructional strategies, including differentiated instruction; 21st century Learning skills; informal and formal assessment strategies; and analyzing data. Also includes domains and concepts central to the discipline, as well as methods for self-assessment in content knowledge and application.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 276 Secondary Methods: Math/Science**3 cr. hrs. 3 periods (3 lec.)**

Instructional methods in Mathematics and Science for the secondary teacher. Includes considerations in instructional design related to mathematics and science such as the Essential Elements of Instruction (EEI), learning objectives, scaffolding instruction, cross-curricular instruction, differentiated instruction, assessment, instructional strategies, learning theories, identifying technology resources, Arizona College and Career Ready Standards, and Arizona Science Standards/Next Generation Science Standards. Also includes factors impacting student learning and achievement such as teacher bias, socio-economic status, gender, language, culture, special needs, teacher expectations, motivation, engagement, and classroom management.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 277 Secondary Methods: Instruction Across the Curriculum**3 cr. hrs. 3 periods (3 lec.)**

Instructional methods focused on integrating English Language Arts (ELA)/Literacy and Math across secondary curriculum with a focus on strategies aligned with the Arizona College and Career Ready Standards (AZCCRS), Arizona Social Studies Standards, and Arizona Science Standards/Next Generation Science Standards. Includes the Essential Elements of Instruction (EEI), designing developmentally appropriate instruction, cross-curricular instruction, and learner collaboration. Also includes strategies for incorporating 21st Century Learning Skills into the curriculum, data literacy strategies, and strategies that promote learner development of social and cultural perspectives that expand understanding of local and global issues.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

EDC 286 Structured English Immersion Methods**3 cr. hrs. 3 periods (3 lec.)**

Introduction to Structured English Immersion (SEI) methods, designed to meet state standards for pre-service and in-service educators of English Language Learners (ELLs). Includes SEI foundations, ELL proficiency standards, second language acquisition, home/school partnerships, assessment, data analysis, instructional strategies, digital tools, and lesson planning.

Information: Meets SEI Endorsement requirements for the Arizona Department of Education.

EDC 291 Student Teaching: Elementary**8 cr. hrs. 20 periods (2 lec., 18 lab)**

Student teaching in an elementary classroom with an experienced teacher mentor. Includes classroom management, objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and Capstone readiness approval are required before enrolling in this course. This course requires 12 weeks (60 full instructional days) of field experience in a grades K-8 classroom. EDC 291A and EDC 291B together constitute EDC 291.

EDC 291A Student Teaching I: Elementary**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Overview of the student teaching experience in a grades 1-8 Educator Preparation Program (EPP) Internship classroom. Includes developmentally appropriate instruction, teaching with collaborative and self-directed learning, goal setting, utilizing prior knowledge, and selecting appropriate teaching resources.

Information: Admission to the Post-Degree Teacher Certification Program and EPP Internship approval are required before enrolling in this course. EDC 291A and EDC 291B together constitute EDC 291.

EDC 291B Student Teaching II: Elementary**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Continuation of the student teaching experience in a grades 1-8 Educator Preparation Program (EPP) Internship classroom. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and EPP Internship approval are required before enrolling in this course. EDC 291A and EDC 291B together constitute EDC 291.

EDC 292 Student Teaching: Secondary**8 cr. hrs. 20 periods (2 lec., 18 lab)**

Student teaching in a secondary classroom with an experienced teacher mentor. Includes classroom management, objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and Capstone readiness approval are required before enrolling in this course. This course requires 12 weeks (60 full instructional days) of field experience in a grades 6-12 classroom. EDC 292A and EDC 292B together constitute EDC 292.

EDC 292A Student Teaching I: Secondary**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Introduction to the student teaching experience in a grades 6-12 Educator Preparation Program (EPP) Internship classroom. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. EDC 292A and EDC 292B together constitute EDC 292.

EDC 292B Student Teaching II: Secondary**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Continuation of the student teaching experience in a grades 6-12 Educator Preparation Program (EPP) Internship classroom. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. EDC 292A and EDC 292B together constitute EDC 292.

Education-Special/Post Degree

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ESE 250 Introduction to Teaching**3 cr. hrs. 3 periods (3 lec.)**

Introduction to teaching as a profession in the United States educational system. Includes professional teaching standards, school governance, and various perspectives on education (including historical, philosophical, social, legal, and ethical issues). Also includes an introduction to lesson planning, data literacy, and school culture and climate.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as EDC 250.

ESE 251 Educational Psychology**3 cr. hrs. 3 periods (3 lec.)**

Overview of how children develop (physically, psychologically, socially, and cognitively) and the ways in which this information guides instruction. Includes theories of how learning is constructed and describes various factors that impact learning, such as student differences, motivation, engagement, classroom management, differentiated instruction, metacognition, assessment, and teacher self-reflection.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as EDC 251.

ESE 252 Survey of Exceptional Education**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the field of Exceptional Education. Includes history and current laws, special education processes and procedures, effective communication, techniques for collaboration and consultation with general and special education teachers and parents, and characteristics of students with exceptionalities. Also includes current and relevant trends in special education, technology, and effective instructional strategies and resources that meet the needs of learners with exceptionalities.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course. Same as EDC 252.

ESE 254 Foundations of Instruction: Mild-Moderate Disabilities**3 cr. hrs. 3 periods (3 lec.)**

Framework for understanding and working with students with mild-moderate disabilities. Includes characteristics of students with mild-moderate disabilities and special education procedures and processes. Also includes collaboration and consultation practices; effective educational techniques to support the needs of learners with disabilities; assistive and educational technology; and current social, cultural, and/or academic trends.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 255 Classroom Management for Mild-Moderate Disabilities**3 cr. hrs. 3 periods (3 lec.)**

Effective classroom management components that support student achievement and engagement for students with mild-moderate disabilities in grades K-12. Includes how teacher expectations, effective communication, positive relationships, and restorative practices can impact learner behavior. Also includes organizing the physical environment, establishing effective classroom rules and procedures, Functional Behavioral Assessments (FBA), and Behavior Intervention Plans (BIP).

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 257 21st Century Learning**3 cr. hrs. 3 periods (3 lec.)**

Introduction to strategies, tools, and resources for teaching in today's classrooms. Includes K-12 content standards, instructional objectives, lesson planning, data literacy, and 21st century skills. Also includes benefits and challenges of technology integration and functions of technology.

Information: Post Degree Teacher Certification Program approval is required before enrolling in this course. Same as EDC 257.

ESE 270 Methods of Instruction: Students/Mild-Moderate Disabilities**3 cr. hrs. 3 periods (3 lec.)**

Application of materials, strategies, methods, and techniques for creating lessons that promote mastery of learning and active participation for teaching students with mild-moderate disabilities. Includes Essential Elements of Instruction (EEI) and Arizona Academic Standards. Also includes the incorporation of differentiated instruction and technology into lesson planning.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 271 Mild-Moderate Methods: K-12 Inst. Across the Curriculum**3 cr. hrs. 3 periods (3 lec.)**

Instructional strategies for integrating English Language Arts (ELA)/Literacy and Math cross-disciplinary instruction for students with mild-moderate exceptionalities. Includes Arizona Academic Standards (AAS), lesson/unit planning, incorporating digital tools, strategies for critical thinking, differentiated instruction, and assessment.

Prerequisite(s): ESE 254 and 270.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 272 Developmental Reading, Instruction, Assessment, Remediation**3 cr. hrs. 3 periods (3 lec.)**

Comprehensive review of reading instruction for struggling learners. Includes reading development; characteristics of effective readers and those with difficulties; formal and informal assessment of phonics, fluency, phonemic awareness, comprehension, and vocabulary; and methods, materials, and techniques for teaching phonics, fluency, phonemic awareness, comprehension, and vocabulary. Also includes lesson planning, reading technology for home/school connection, and current academic reading trends.

Prerequisite(s): ESE 254 and 270.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 273 Diagnosis and Assessment of Mild-Moderate Disabilities**3 cr. hrs. 3 periods (3 lec.)**

A comprehensive review of measurement terminology, principles, ethical practices, and types; testing accommodations and modifications; testing bias; using technology to create forms of feedback; and creating informal assessments. Also includes cognitive processes that influence learning, data analysis, and the use of data to plan instruction.

Information: Post-Degree Teacher Certification Program approval is required before enrolling in this course.

ESE 290 Student Teaching: Mild-Moderate Disabilities**8 cr. hrs. 20 periods (2 lec., 18 lab)**

Student teaching in a mild-moderate special education classroom with an experienced teacher mentor. Includes classroom management, objectives, Individualized Education Programs (IEPs), assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and Capstone readiness approval are required before enrolling in this course. This course requires 12 weeks (60 full instructional days) of field experience in a grades K-12 classroom. ESE 290A and ESE 290B together constitute ESE 290.

ESE 290A Student Teaching I: Mild-Moderate Disabilities**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Introduction to the student teaching experience in a grades K-12 Educator Preparation Program (EPP) Internship classroom having students with mild-moderate disabilities. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and EPP Internship approval are required before enrolling in this course. ESE 290A and ESE 290B together constitute ESE 290.

ESE 290B Student Teaching II: Mild-Moderate Disabilities**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Continuation of the student teaching experience in a grades K-12 Educator Preparation Program (EPP) Internship classroom having students with mild-moderate disabilities. Includes classroom management, learning objectives, assessment, lesson planning, differentiation, and collaboration.

Information: Admission to the Post-Degree Teacher Certification Program and EPP Internship approval are required before enrolling in this course. ESE 290A and ESE 290B together constitute ESE 290.

Educational Tech Training

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ETT 101 Introduction to Educational Technology**3 cr. hrs. 3 periods (3 lec.)**

An introduction to educational technology exploring the current and emerging technologies available to teachers. Includes theoretical foundations of educational technology, technology enhanced instruction, digital technologies for the classroom, and an overview of productivity, school and classroom management software.

Electrical Utilities Tech

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

EUT 103 Generation Steam Systems**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to steam systems, thermodynamics, and boiler operation. Includes steam as an energy generating source, steam system operation, and boilers. Also includes pressure and temperature control.

EUT 104 Overhead and Underground Systems, Hardware, and Equipment**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Procedures for working in the overhead and underground distribution components. Includes pole hardware, overhead conductors, porcelain and polymer equipment, overhead transformers, underground equipment installation, electrical utility disciplines, and safety.

EUT 106 Measuring Electricity**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Overview of the theories and devices used to measure electricity. Includes electric utility metering terminology, Blondel's theorem, kilowatt-hour meter operating principles, single-phase and network meters, wiring connections for mounting devices, voltmeter, voltage indicator, and ammeter usage, and Direct Current (DC), and Alternating Current (AC), circuits.

Emergency Med. Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

EMT 089 Skills Reinforcement for EMT 100**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Overview, techniques, and skills for pre-hospital emergency response. Includes equipment operations, communication, documentation, packaging, and patient assessment.

Recommendation: Concurrent enrollment in EMT 100.

Information: Course supplements lecture time and laboratory experience for EMT 100.

EMT 090 National Registry Skills Preparation**.5 cr. hrs. .5 periods (.5 lec.)**

Introduction to the practical portion of the EMT-B National Registry Skills stations. Includes introduction to the six stations required for EMT-B certification. Also includes opportunity to serve as a patient in medical and trauma scenarios, and to practice hands on assessment with other students.

Recommendation: Designed for students enrolling in EMT 100 the following semester.

Information: Prepares students to serve as patients for National Registry testing.

EMT 091 Ambulance Operations**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Practical experience and safe operation of emergency vehicles. Includes operating an ambulance on a closed course to become familiar with its handling and operations, and subsequent completion of an obstacle course similar to the Emergency Vehicle Operators Course (EVOC). Also includes proper gurney operation and key safety matters pertaining to the use of lights and sirens.

Recommendation: Concurrent enrollment in EMT 100 or 110.

Information: Students must possess a valid driver's license.

EMT 092 Cardiac Monitor (EKG) for the EMT**1.5 cr. hrs. 1.5 periods (1.5 lec.)**

Introduction to the cardiac monitor or electrocardiograph (EKG). Includes an in-depth look at the cardiac monitor, the many different cardiac rhythms students may encounter as an EMT, and discussion of various treatments for abnormal rhythms.

Corequisite(s): Concurrent enrollment in EMT 100 or 110.

Information: Not a substitute for Advanced Cardiac Life Support (ACLS), but appropriate for entry level EMT students. Ideal exploration course for those considering a career beyond EMT, such as Paramedic or Nursing.

EMT 100 Emergency Medical Technology**9 cr. hrs. 15 periods (6 lec., 9 lab)**

Techniques of pre-hospital emergency medical care for the Emergency Medical Technician (EMT). Includes history of emergency medical care delivery systems, roles and responsibilities of emergency medical services (EMS) providers, ethical and legal issues, and patient assessment. Also includes symptoms of illnesses, injuries, medical emergencies, appropriate medical techniques, triage, and ambulance operations.

Information: Students must be 18 years of age when class begins. Students must have cardiopulmonary resuscitation (CPR) certification at the Healthcare Provider or Professional Rescuer Level and receive a minimum score of 69 on the Accuplacer reading assessment. Students must show proof of personal medical insurance and provide immunization records for MMR, TD, TB skin test, and Varicella; flu vaccine is encouraged. Students must show proof of Arizona Department of Public Safety (AZ DPS) Fingerprint Clearance Card or proof of pending AZ DPS application approval (applications provided by the EMT Service Center. Students must meet College admissions' requirements and create an Arizona Department of Health Services online account. Students must submit to drug screening (form provided by the EMT Service Center), and must meet with EMT staff/ prior to registration.

EMT 106 Overview of Emergency Medical Services**3 cr. hrs. 3 periods (3 lec.)**

Overview of Emergency Medical Services (EMS). Includes health care delivery systems, medical terminology, ethics and professionalism, patient rights and responsibilities; communication; basic patient assessment; workplace and personal safety.

EMT 109 Human Anatomy and Physiology for EMT**3 cr. hrs. 3 periods (3 lec.)**

Human anatomy and physiology for Emergency Medical Technicians (EMT). Includes basic physiology of the body systems and medical terminology addressed in the NREMT/AZDHS. Also includes patient assessment, differential diagnosis, and treatment pathways.

Recommendation: REA 112 or equivalent score on Reading assessment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Intended for students interested in EMT 100.

EMT 110 Emergency Medical Responder**3 cr. hrs. 3 periods (3 lec.)**

Techniques in pre-hospital emergency care appropriate to the Emergency Medical Responder (EMR) Scope of Practice. Includes identifying signs and symptoms associated with illness and traumatic injuries. Also includes intervention used in managing patient and transfer of patient to higher level medical authority.

Information: This course will prepare those wishing to enroll in EMT 100. Covers the DOT curriculum for EMR/EMT as well as the National Registry Practical portion of EMR. Course is designed to prepare eligible students for NREMT EMR examination.

EMT 111 Heartsaver First Aid Provider**.5 cr. hrs. .5 periods (.5 lec.)**

Beginning first aid concepts and techniques for the lay person. Includes principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with either medical or traumatic injuries and complaints. Includes first aid general principles, medical, and trauma. Also includes adult Cardiopulmonary Resuscitation (CPR), Adult Automatic External Defibrillator (AED), and environmental emergencies.

Information: The Heartsaver First Aid and CPR and AED Provider Manuals are required.

EMT 112 Heartsaver Cardiopulmonary Resuscitation**.5 cr. hrs. .5 periods (.5 lec.)**

Concepts and techniques to assess and treat patients with airway obstruction, respiratory, and cardiac arrest for the lay person. Includes the integration of principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with foreign body airway obstruction, respiratory and/or cardiac arrest. Includes choice of two topics: Adult Cardiopulmonary Resuscitation (CPR) and Pediatric CPR.

Information: Purchase of the Heartsaver CPR provider manual prior to class is required.

EMT 113 Healthcare Provider Certification: BLS, HIPAA, OSHA and BBP**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Overview of recommended cardiopulmonary resuscitation guidelines and national best practices for healthcare providers. Includes federal governances of personal and workplace safety within emergency services and medicolegal considerations. Also includes Occupational Safety and Health Administration regulations and recommendations. Also includes theory and practice for treatment of infants, children and adults in cardiac arrest or with airway obstructions.

Information: Upon successful completion of course, students may obtain American Heart Association Basic Life Support for healthcare provider CPR, American Heart Association Blood Borne Pathogens certification, American Heart Association First Aid certification, and Health Insurance Portability and Accountability Act awareness certification.

EMT 140 Pre-Hospital Trauma Life Support**1.5 cr. hrs. 2 periods (1 lec., 1 lab)**

Concepts and techniques for evaluating assessment findings to formulate a field impression and implementation of a field treatment plan for a trauma patient. Includes systemic approach to patient assessment and management, airway and ventilation management, shock, soft tissue and burn injuries, isolated and multi-systems trauma, and various types of trauma patients.

EMT 141 Pre-Hospital Trauma Life Support Refresher**1.5 cr. hrs. 2 periods (1 lec., 1 lab)**

Concepts and scenario-based techniques for evaluating assessment findings to formulate a field impression and implementation of a field treatment plan for a trauma patient. Includes a systemic approach to patient assessment and management, airway and ventilation management, shock, soft tissue and burn injuries, isolated and multi-systems trauma, and various types of trauma patients.

Information: Includes teaching and evaluation stations as a review and update for those students who have taken EMT 140.

EMT 155 Advanced Medical Life Support (AMLS) Provider**1.5 cr. hrs. 1.5 periods (1.5 lec.)**

Overview, concepts and techniques to study medical emergencies related to adult patients. Includes a pragmatic approach and systematic format regarding patient assessment and management. Includes interactive scenario-based lectures with hands-on physical assessment of patients. Includes a global and initial assessment taking into account the patient's environmental and scene issues that allows the participant to formulate a general impression, determine the patient's stability, and explore the possibilities of differential diagnoses. Also includes using a systematic approach to obtain an initial assessment, vital signs, present illness, past medical, focused physical exam; the participant will be driven by the differential diagnoses.

Information: AMLS is an advanced course that assumes a previous working knowledge of medical emergencies, there are necessary prerequisites: EMT-B, EMT-I, EMT-P, RN, MD, DO, and other advanced level healthcare providers with at least one year of clinical experience. Participant must read the AMLS textbook before class and come to class prepared and complete the pre-test. EMT-B will have a separate pre-test and post-test written evaluation for EMT-Basic providers.

EMT 158 Transition Training for EMT**1.5 cr. hrs. 2.5 periods (1 lec., 1.5 lab)**

Review of current techniques in pre-hospital emergency care for the basic Emergency Medical Technician (EMT). Includes signs and symptoms of illness, injuries, medical emergencies, appropriate medical techniques, and ambulance operations.

Information: EMT-B State of Arizona current certification is required before enrolling in this course. May be taken six times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

EMT 159 Cardiopulmonary Resuscitation: Healthcare Provider**.5 cr. hrs. .75 periods (.25 lec., .5 lab)**

Introduction to the techniques required to provide Cardiopulmonary Resuscitation (CPR) at the healthcare provider level. Includes introduction to body systems and disease states, which lead to cardiac and respiratory arrest. Also includes the assessment and intervention for the airway, respiration and central circulation.

Information: Course meets American Heart Association guidelines for the healthcare provider level. May be taken six times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

EMT 170 Advanced Life Support Operations**1.5 cr. hrs. 2 periods (1.25 lec., .75 lab)**

Introduction to skills necessary to assess, extricate, and care for victims of crash incidents. Includes exposure to scene management skills to include size-up, disentanglement, victim stabilization for single and multi-victim situations, hazardous materials incidents, integration of local emergency medical services (EMS) for patient assessment and management, and standard operating procedures to selected victim scenarios.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 205 ALS Pharmacology and Medication Administration**3.5 cr. hrs. 4.5 periods (3 lec., 1.5 lab)**

Elements of pharmacological agents and their administration. Includes basic pharmacological background and actions of drugs, regulations, human body systems, and pharmacokinetics. Also includes medications for patient in an emergency setting, and pharmacological mathematics.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 214 ALS Advanced Special Considerations**2 cr. hrs. 2.5 periods (1.75 lec., .75 lab)**

Advanced life support skills approach to emergency care of the emotionally disturbed. Includes emotional aspects, approach to the patient, and psychiatric emergencies. Also includes techniques of management and demonstration of skills within a simulated hospital environment.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 218 Paramedic National Registry Preparation**3 cr. hrs. 6 periods (1.5 lec., 4.5 lab)**

Review and preparation in standards of paramedic emergency care at the state and national levels. Includes developing testing skills and questions related to assessment, analysis, intervention or evaluation. Also includes each component of the Emergency Medical Technician Paramedic National Standard Curriculum.

Information: Acceptance into a Paramedic program is required before enrolling in this course.

EMT 219 ALS Foundations**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the Advanced Life Support (ALS) career field. Includes roles and responsibilities, Emergency Medical Services (EMS) components, well being, illness and injury prevention, ethics, medical and legal considerations.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 221 ALS Airway and Ventilation**2 cr. hrs. 2.5 periods (1.75 lec., .75 lab)**

Techniques for establishing and/or maintaining a patient's airway. Also includes anatomy and physiology, age specific techniques and procedures, introduction to respiratory pharmacology and respiratory drug profiling.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 222 ALS Patient Assessment and Assessment Based Management**2 cr. hrs. 3 periods (1.5 lec., 1.5 lab)**

Skills to take a proper history and perform an advanced physical assessment on an emergency patient, and communicate the findings to the patient and others. Includes the physical exam, integrative and on-going exams, communications and documentation. Also includes the implementation of a management plan for patients with common complaints and injuries, dispatch scenarios, scene size-up and forming impressions.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 223 ALS Trauma Emergencies and Systems**2.5 cr. hrs. 3 periods (2.25 lec., .75 lab)**

Techniques to formulate a field impression and implement the treatment plan for the trauma or shock patient. Includes shock, burn injuries, and isolated and multi-systems trauma.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 224 ALS Medical Emergencies**4 cr. hrs. 5 periods (3.5 lec., 1.5 lab)**

Introduction to the utilization of assessment findings to formulate a field impression and implement the treatment plan for the medical patient. Includes respiratory, cardiovascular, neurological, endocrine, allergic, toxic, abdominal and urologic, environmental, behavioral and gynecological emergencies.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 225 ALS Special Medical Considerations**2.5 cr. hrs. 3 periods (2.25 lec., .75 lab)**

Introduction to special medical consideration concepts. Includes utilizing assessment findings to formulate a field impression and implement the treatment plan for obstetric, neonatal, pediatric, geriatric, and chronic-care patients.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 227LC ALS Practicum: Clinical Lab-Emergency Room**1.5 cr. hrs. 4.5 periods (4.5 lab)**

Techniques for performing skills and completing documentation in accordance with established guidelines, orders, and protocols for critical care, emergency department, labor and delivery, pediatrics, and other specialty units. Includes applying skills associated to the scope of practice for the Advanced Life Support (ALS) Professional.

Information: Acceptance into an Paramedic program is required before enrolling in this course.

EMT 228LC ALS Practicum: Vehicular Lab-Team Member**2 cr. hrs. 6 periods (6 lab)**

ALS vehicular lab concepts. Includes techniques for performing and documenting in accordance with established guidelines, orders, and protocols, and acting within the scope of practice of the ALS Professional and under medical supervision during a vehicular lab.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 230 Basic ECG Interpretation**3 cr. hrs. 3.4 periods (2.8 lec., .6 lab)**

Introduction to all levels of emergency care providers with basic electrocardiographic (ECG) rhythm analysis. Includes interpretation and related care in a clinical and pre-hospital setting.

Information: Required content for the identification and treatment of cardiac emergencies. This course is designed for paramedics and paramedic students.

EMT 233 Basic Cardiac Life Support Instructor**.75 cr. hrs. .75 periods (.75 lec.)**

Concepts, techniques, and skills in how to teach the Basic Cardiac Life Support of the Heartsaver First Aid Provider course. Includes basic principles, course management, personnel issues, time and resource management, and remediation.

Information: Provides the challenge portion of the American Heart Association (AHA) online course in Advanced Cardiac Life Support (ACLS). AHA certificate is required at the beginning of class.

EMT 238 Advanced Cardiac Life Support Instructor**1 cr. hrs. 1 periods (1 lec.)**

Overview, concepts, and techniques in how to teach the Advanced Cardiac Life Support in the Provider course. Includes basic principles, course management, personnel issues, time and resource management, and remediation.

EMT 239 Pediatric Advanced Cardiac Life Support Instructor**1 cr. hrs. 1 periods (1 lec.)**

Overview, concepts, and techniques in how to teach Pediatric Advanced Cardiac Life Support (PALS) course to the provider. Includes pediatric basic principles, course management, personnel issues, time and resource management, and remediation.

EMT 242 ALS Advanced Foundations**4 cr. hrs. 4.5 periods (3.75 lec., .75 lab)**

Continuation of EMT 219. Foundations of skills and principles in preparing to be a paramedic. Includes medical terminology, the human body structure, and pathophysiology.

Prerequisite(s): EMT 219.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 244 ALS Advanced Medical Emergencies**2.5 cr. hrs. 3 periods (2.25 lec., .75 lab)**

Continuation of EMT 224. Advanced life support techniques using pre-hospital approaches to the recognition and intervention of medical emergencies related to toxicology, infectious disease, and hematology. Includes poisoning, drug overdose, and transmission of infectious diseases.

Prerequisite(s): EMT 224.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 247LC ALS Advanced Practicum: Clinical Lab-Specialized Care**2 cr. hrs. 6 periods (6 lab)**

Continuation of EMT 227LC. In-hospital clinical procedures for the ALS professional. Includes placement in the clinical (hospital) setting for supervised skills application with real patients.

Prerequisite(s): EMT 227LC.

Information: Acceptance into the Paramedic program is required before enrolling in this course.

EMT 248LC ALS Advanced Practicum: Vehicular Lab-Team Lead**4 cr. hrs. 12 periods (12 lab)**

Continuation of EMT 228LC. Pre-hospital emergency medical procedures for the ALS professional. Includes skills appropriate to the ALS scope of practice in the pre-hospital setting according to established protocols.

Prerequisite(s): EMT 228LC.

Information: Acceptance into the Paramedic program is required before enrolling in this course. This is the capstone course for degree.

EMT 250 Advanced Cardiac Care**1 cr. hrs. 1.5 periods (.75 lec., .75 lab)**

Introduction to the integration of pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with cardiovascular disease/injury based on 3-lead and 12-lead cardiac monitoring and interpretation. Also includes information on cardiovascular anatomy and physiology, cardiovascular pathologies and management, and adjunctive diagnostics.

EMT 251 Advanced Cardiac Care Refresher**.75 cr. hrs. 1 periods (.5 lec., .5 lab)**

Review of the integration of pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with cardiovascular disease/injury based on 3-lead and 12-lead cardiac monitoring and interpretation. Also includes information on cardiovascular anatomy and physiology, cardiovascular pathologies and management, and adjunctive diagnostics.

EMT 252 Pediatric Advanced Life Support**1 cr. hrs. 1.5 periods (.75 lec., .75 lab)**

Techniques for emergency services for children. Integrates physiological, psychological, and social changes throughout human growth and development. Includes information on pediatric assessment, airway management and respiratory emergencies, cardiovascular emergencies. Also includes information on neonatal emergencies, children with special healthcare needs, and Sudden Infant Death Syndrome (SIDS).

EMT 253 Pediatric Advanced Life Support Refresher**.75 cr. hrs. 1 periods (.5 lec., .5 lab)**

Overview of techniques for emergency services for children. Integrated physiological, psychological, and social changes throughout human growth and development. Includes information on pediatric assessment, airway management and respiratory emergencies, cardiovascular emergencies. Also includes information on neonatal emergencies, children with special healthcare needs, and Sudden Infant Death Syndrome (SIDS).

EMT 254 Advanced ECG Interpretation**2 cr. hrs. 2.5 periods (1.75 lec., .75 lab)**

Continuation of EMT 230. Integration of pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the patient with cardiovascular disease/ injury based on 3-lead and 12-lead cardiac monitoring and interpretation. Also includes information on cardiovascular anatomy and physiology, electrocardiographic monitoring, and adjunctive diagnostics.

Prerequisite(s): EMT 230.

EMT 255 Instructional Strategies**2 cr. hrs. 2.5 periods (1.5 lec., 1 lab)**

Introduction for organization and preparation of curriculum materials for presentation. Includes instructor roles and responsibilities, legal issues, the adult learner, creating an effective learning environment, and instructional strategies and methods.

EMT 258 Pediatric Education for Pre-Hospital Professionals**1.5 cr. hrs. 2 periods (1 lec., 1 lab)**

Foundations of skills and principles in dealing with pediatric patients in a pre-hospital setting. Includes information on the integration of the physiological, psychological, and social changes throughout human growth and development with assessment and communication strategies for patients of all ages.

EMT 259 Pediatric Education for Pre-Hospital Professionals Refresher**.75 cr. hrs. 1 periods (.5 lec., .5 lab)**

Overview of the foundations of skills and principles in dealing with pediatric patients in a pre-hospital setting. Includes information on the integration of the physiological, psychological, and social changes throughout human growth and development with assessment and communication strategies for patients of all ages.

EMT 263 Tox-Medic**1.5 cr. hrs. 1.5 periods (1.5 lec.)**

Provides paramedics with the training required which authorizes them to perform a medical treatment or administer a drug when responding to a hazardous materials incident.

EMT 295 ALS Independent Research**1 cr. hrs. 3 periods (3 lab)**

Independent research in advanced pre-hospital care. Includes developing and writing an independent, applied research project, utilizing American Psychological Association (APA) style and format. Also includes exploration of current issues in Emergency Medical Services (EMS) or related subject matter through active research.

Information: Research and writing will be done independently with assistance from the course instructor. Student will select a research topic with approval of course instructor.

Engineering

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ENG 102IN Problem-Solving and Engineering Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Design, effective team participation, and career preparation in engineering. Includes the different engineering fields and careers, basic skills associated with engineering problem solving and communication, the design process, participation in hands-on design projects, and ethics and professional responsibility.

Prerequisite(s): MAT 189 or higher.

ENG 105IN Introduction to MATLAB I**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Fundamental knowledge and practical abilities in MATLAB utilizing technical numerical computations in engineering courses. Includes script files, creating arrays, mathematical operations with 1-D arrays, two dimensional plots, and polynomials.

Prerequisite(s): MAT 220.

ENG 110IN Solid State Chemistry**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamental principles of the chemistry of condensed states of matter including metals, polymers, molecular solids, and ceramics. Includes quantization, atomic structure, bonding, band and crystalline structure, conductivity, thermodynamics, and phase diagrams. Also includes electrochemistry and electrochemical devices, glass, optical properties and devices, and semiconductor devices.

Prerequisite(s): CHM 151IN and MAT 220 or concurrent enrollment.

ENG 120IN Civil Engineering Graphics and Design**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Introduction to civil engineering graphics and design using sketching and computer-aided design (CAD) Civil 3D software. Includes engineering basic applications, basic math and geometry, basic math and algorithms, corridor development, site grading and earthwork concepts, piping and draining concepts, surveying concepts and procedures, and visualization and construction documents.

Prerequisite(s): MAT 189.

ENG 122IN Engineering Graphics and Design with Solid Modeling**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Introduction to engineering graphics and the concepts of engineering design. Includes sketching, dimensioning practices and tolerances, computer-aided design (CAD), basic part modeling, and three-dimensional (3D) assembly modeling.

Prerequisite(s): MAT 189.

ENG 130IN Elementary Surveying**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the subject of surveying as it pertains to the field of civil engineering. Includes measurement of distances, leveling, profiling and grade calculations, measurement of angles, remote elevations, and traverse closure. Also includes topographic surveys, public land surveying, and land ownership.

Prerequisite(s): MAT 189.

ENG 175IN Computer Programming for Engineering Applications I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Programming in C with emphasis on numerical applications in engineering. Includes structure of C programs; data types, operations, and basics of C; selection, repetition, arrays, functions, and data files.

Prerequisite(s): MAT 189.

ENG 201 Introduction to Mining Engineering**3 cr. hrs. 3 periods (3 lec.)**

Basic introduction to the fundamental operations involved in mining engineering. Includes the fundamental processes for sustainable resource development, mine planning, and design based on data and operating parameters. Also includes science, engineering, and policies to locate an ore deposit, plan surface, underground mines, operating mines and processing facilities, reclaim mine sites, and work with communities.

Prerequisite(s): ENG 102IN.

ENG 205IN Introduction to MATLAB II**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Fundamental knowledge for problem solving and programming using MATLAB. Includes creating arrays, mathematical operations with 2-D arrays, curve fitting and interpolation, programming in MATLAB, functions and function files, three-dimensional plots, and solving a system of linear equations.

Prerequisite(s): ENG 105IN or concurrent enrollment.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.

ENG 210 Engineering Mechanics: Statics**3 cr. hrs. 3 periods (3 lec.)**

Engineering analysis of static mechanical systems. Includes statics of particles, rigid bodies and equilibrium, distributed forces, analysis of structure, forces in beams and cables, friction, and moments of inertia.

Prerequisite(s): MAT 231 and PHY 210IN.

ENG 218 Fluid Mechanics**3 cr. hrs. 3 periods (3 lec.)**

Introduction and fundamental concepts of fluid dynamics and fluid statics. Includes basic equations for a control volume, fluids in motion, inviscid flow, dimensional analysis, flow in pipes and ducts, and boundary layers.

Prerequisite(s): ENG 210 and MAT 241.

ENG 220 Engineering Mechanics: Dynamics**3 cr. hrs. 3 periods (3 lec.)**

Study of the motion of bodies under the action of forces. Includes introduction to dynamics, kinematics of particles and rigid body, and kinetics of particles and rigid body.

Prerequisite(s): ENG 210, and MAT 241.

ENG 220RC Engineering Mechanics: Dynamics Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with ENG 220 in order to provide supplemental instruction. Facilitated discussions, discrete study groups, and collaborative problem solving provide more exposure to and more thorough discourse on engineering mechanics concepts and theory. Emphasizes applying mathematics, science, and engineering concepts to solve kinematic and kinetics problems; while providing opportunity to apply problem solving techniques and critical thinking. Study of the motion of bodies under the action of forces. Includes introduction to dynamics, kinematics of particles and rigid body, and kinetics of particles and rigid body.

Prerequisite(s): ENG 210 and MAT 241.

Corequisite(s): ENG 220

Information: Pass-Fail only. Students receiving a grade of C in ENG 210 or MAT 241 will be required to register for the ENG 220RC course concurrently; for students receiving a B grade or higher in ENG 210 and MAT 241, the ENG 220RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

ENG 230 Mechanics of Materials**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the analysis and design of the mechanical properties of materials. Includes the concept of stress and strain, axially loaded members, torsion, stresses and strains in beams, analysis of stress and strain, deflections of beams, statically indeterminate beams, and columns.

Prerequisite(s): ENG 210 with a grade of B or better. Students receiving a grade of C in ENG 210 will be required to register for the ENG 230RC course concurrently; for students receiving a grade of B or higher in ENG 210, the ENG 230RC course is optional.

ENG 230RC Mechanics of Materials Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with ENG 230 in order to provide supplemental instruction. Facilitated discussions, discrete study groups, and collaborative problem solving provide more exposure to and more thorough discourse on engineering concepts and theory. Emphasizes applying mathematics, science, and engineering concepts to solve mechanics of materials problems; while providing opportunity to apply problem solving techniques and critical thinking. Introduction to the analysis and design of the mechanical properties of materials. Includes the concept of stress and strain, axially loaded members, torsion, stresses and strains in beams, analysis of stress and strain, deflections of beams, statically indeterminate beams, and columns.

Prerequisite(s): ENG 210.

Corequisite(s): ENG 230

Information: Pass-Fail only. Students receiving a grade of C in ENG 210 will be required to register for the ENG 230RC course concurrently; for students receiving a B grade or higher in ENG 210, the ENG 230RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

ENG 232 Thermodynamics**3 cr. hrs. 3 periods (3 lec.)**

Basic laws and examples of engineering applications of macroscopic thermodynamics. Includes an introduction to concepts and definitions, energy and the first law of thermodynamics, evaluating properties, control volume energy analysis, the second law of thermodynamics, using entropy, vapor power systems, gas power systems, and refrigeration and heat pump systems.

Prerequisite(s): With a grade of B or higher: MAT 241 and PHY 210IN. Students receiving a grade of C in MAT 241 or PHY 210IN will be required to register for the ENG 232RC course concurrently; for students receiving a grade of B or higher in MAT 241 and PHY 210IN, the ENG 232RC course is optional.

ENG 232RC Thermodynamics Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with ENG 232 in order to provide supplemental instruction. Facilitated discussions, discrete study groups, and collaborative problem solving provide more exposure to and more thorough discourse on engineering concepts and theory. Emphasizes applying mathematics, science, and engineering concepts to solve thermodynamics problems; while providing opportunity to apply problem solving techniques and critical thinking. Basic laws and examples of engineering applications of macroscopic thermodynamics. Includes an introduction to concepts and definitions, energy and the first law of thermodynamics, evaluating properties, control volume energy analysis, the second law of thermodynamics, using entropy, vapor power systems, gas power systems, and refrigeration and heat pump systems.

Prerequisite(s): MAT 241 and PHY 210IN.*Corequisite(s):* ENG 232

Information: Pass-fail only. Students receiving a grade of C in MAT 241 or PHY 210IN will be required to register for the ENG 232RC course concurrently; for students receiving a B grade or higher in MAT 241 and PHY 210IN, the ENG 232RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

ENG 260 Electrical Engineering**3 cr. hrs. 3 periods (3 lec.)**

Introductory survey of the electrical engineering discipline with emphasis on electrical power applications. Includes resistive circuits, inductance and capacitance, transients, steady-state sinusoidal analysis, and logic circuits. Also includes operational amplifiers, microcomputers, and diode electronics.

Prerequisite(s): MAT 231 and PHY 216IN.**ENG 274IN Digital Logic****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the theory and design of digital logic circuits. Includes combinational logic design, sequential logic design, combinational and sequential component design, register-transfer level design, optimizations and tradeoffs, and physical implementation.

Prerequisite(s): ENG 175IN and MAT 231.*Information:* IN is the integrated version of the course with the lecture and lab taught simultaneously.**ENG 276IN Computer Programming for Engineering Applications II****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of ENG 175IN. Advanced programming in C for engineering applications. Includes review of C programming, memory concepts, algorithms and analysis, and an introduction to C++

Prerequisite(s): ENG 175IN.**ENG 282IN Basic Electric Circuits****5 cr. hrs. 7 periods (4 lec., 3 lab)**

Introduction to the fundamentals of alternating current (AC) and direct current (DC) circuits. Includes circuit variables, circuit elements, simple resistive circuits, techniques of circuit analysis, the operational amplifier; inductance, capacitance, and mutual inductance; response of first-order resistor-inductor (RL) and resistor-capacitor (RC) circuits, natural and step responses of RLC circuits, and sinusoidal steady-state analysis.

Prerequisite(s): MAT 231 and PHY 216IN.*Corequisite(s):* MAT 262**ENG 297 Mineral Resources Engineering Topics Seminar****1 cr. hrs. 1 periods (1 lec.)**

Proseminar provides a first opportunity for students to research and exchange information on topics of interest in mineral resource engineering. Includes basic mining concepts and systems, mining technologies throughout the mine life, safety and environmental issues, current challenges, and technology innovations in the broad area of mining resources. Further develop skills in technical writing, project design, and apply knowledge from general education courses to challenges in the global development of resources.

Prerequisite(s): ENG 102IN.**English Second Language**

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ESL 060CM Oral Communication for Non-Native Speakers of English I**4 cr. hrs. 4 periods (4 lec.)**

High beginning-level communication for situations and tasks relevant to daily and academic life. Includes conversation about social and academic topics with communicative appropriateness and clarity. Also includes listening and speaking strategies and practice, basic vocabulary, study strategies, technology, and exploration of college resources.

Prerequisite(s): Required score on ESL assessment test.

Recommendation: Concurrent enrollment in an ESL Reading and Vocabulary course (RV) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisite may be waived with consent of instructor. See an ESL instructor for details.

ESL 060MT Beginning Writing Mechanics and Technology**1 cr. hrs. 1 periods (1 lec.)**

Instruction and practice using beginning techniques for writing in English. Includes standard format and handwriting, writing mechanics, and basic technology skills for language learning.

Prerequisite(s): Required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL 060WG.

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 060PR Pronunciation I**2 cr. hrs. 2 periods (2 lec.)**

Pronunciation and spelling for non-native English speakers at the basic level. Includes basic sound-symbol patterns and production of corresponding sounds, and the stress, rhythm and intonation to develop fluency in communication.

Prerequisite(s): Required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL Oral Communication course (CM).

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 060RV Reading & Vocabulary for Non-Native Speakers of English I**4 cr. hrs. 4 periods (4 lec.)**

High beginning-level reading and vocabulary skills for non-native speakers of English. Includes comprehension of narrative and informational texts, vocabulary, written tasks, information literacy, study strategies, college resources, and a community of readers.

Prerequisite(s): Required score on ESL assessment test.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisite may be waived with permission of instructor. See an ESL instructor for details.

ESL 060WG Writing and Grammar for Non-Native Speakers of English I**4 cr. hrs. 4 periods (4 lec.)**

High beginning-level writing and grammar skills for non-native speakers of English. Includes rhetorical forms, writing processes and conventions, sentence structure, grammar, study strategies, technology, and college resources.

Prerequisite(s): Required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL Oral Communication course (CM) and an ESL Reading and Vocabulary course (RV) according to previous course completion or ESL assessment test score.

Information: Prerequisite may be waived with consent of instructor. See an ESL instructor for details.

ESL 070CM Oral Communication for Non-Native Speakers of English II**4 cr. hrs. 4 periods (4 lec.)**

Intermediate-level communication skills for increased fluency and comprehension. Includes conversation about social and academic topics with increased proficiency and clarity; listening and speaking strategies and practice; vocabulary building skills; study strategies; technology; and increased awareness of college resources.

Prerequisite(s): Required score on ESL assessment test OR completion of ESL 060CM with a grade of C or better.

Recommendation: Concurrent enrollment in an ESL Reading and Vocabulary course (RV) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 070CU Survey of American Culture**1 cr. hrs. 1 periods (1 lec.)**

Intermediate-level course on American culture for ESL students. Includes readings on various American culture topics, and vocabulary development.

Prerequisite(s): ESL 060RV with a C or better, or required score on ESL assessment test.

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ESL 070MT Intermediate Writing Mechanics and Technology**1 cr. hrs. 1 periods (1 lec.)**

Instruction and practice using intermediate techniques for writing in English. Includes standard formats, writing mechanics, and intermediate technology skills.

Prerequisite(s): ESL 060WG with a C or better, or required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL 070WG.

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 070PR Pronunciation II**2 cr. hrs. 2 periods (2 lec.)**

Pronunciation for non-native English speakers at the intermediate level. Includes word stress, sentence stress and rhythm, and intonation patterns.

Prerequisite(s): ESL 060CM with a C or better, or required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL Oral Communication course (CM).

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 070RV Reading and Vocabulary for Non-Native Speakers of English II**4 cr. hrs. 4 periods (4 lec.)**

Intermediate-level reading and vocabulary skills for non-native speakers of English. Includes comprehension of narrative and informational texts, vocabulary, written tasks, information literacy, study strategies, college resources, and a community of readers.

Prerequisite(s): Required score on ESL assessment test OR completion of ESL 060RV with a grade of C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 070WG Writing and Grammar for Non-Native Speakers of English II**4 cr. hrs. 4 periods (4 lec.)**

Intermediate-level academic writing and grammar skills. Includes rhetorical forms, writing process and conventions, sentence structure, grammar, study strategies, technology, and college resources.

Prerequisite(s): Required score on ESL assessment test OR completion of ESL 060WG with a grade of C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Reading and Vocabulary course (RV) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 079EI Institute for American English and Culture I**1-15 cr. hrs. 1-15 periods (1-15 lec.)**

Intermediate level English immersion program for non-English speaking international students. Includes English skills development in intermediate oral communication, writing, reading, and vocabulary; and exploration of cross-cultural issues.

Information: Restricted registration. See an international advisor for further information. Extent of emphasis placed on specific activities and objectives in Program I will vary depending on audience and number of credits.

ESL 080CM Oral Communication for Non-Native Speakers of English III**4 cr. hrs. 4 periods (4 lec.)**

High intermediate-level communication skills for increased fluency and comprehension. Includes listening comprehension and retention, speaking and academic presentations, and communicative appropriateness.

Prerequisite(s): Placement into ESL 080CM; or completion of ESL 070CM and ESL 060RV and ESL 060WG with a C or better; or placement into ESL 70 level and completion of ESL 070CM with a C or better.

Recommendation: Concurrent enrollment in an ESL Reading and Vocabulary course (RV) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 080MT Advanced Writing Mechanics and Technology**1 cr. hrs. 1 periods (1 lec.)**

Instruction and practice using advanced techniques for writing in English. Includes standard formats, writing mechanics, and advanced technology skills.

Prerequisite(s): ESL 070WG with a C or better, or required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL 080WG or 085WG.

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 080PR Pronunciation III**2 cr. hrs. 2 periods (2 lec.)**

Pronunciation for non-native English speakers at the advanced level. Includes word stress and vowel reduction, sentence stress and rhythm, and intonation and phrasing.

Prerequisite(s): ESL 070CM with a C or better, or required score on ESL assessment test.

Recommendation: Concurrent enrollment in ESL Oral Communication course (CM).

Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.

ESL 080RV Reading & Vocabulary for Non-Native Speakers of English III**4 cr. hrs. 4 periods (4 lec.)**

High intermediate-level reading and vocabulary skills for non-native speakers of English. Includes comprehension of narrative and informational texts, vocabulary, written tasks, information literacy, study strategies, college resources, and a community of readers.

Prerequisite(s): Placement into ESL 080RV; or completion of ESL 070RV and ESL 060CM and ESL 060WG with a C or better; or placement into ESL 70 level and completion of ESL 070RV with a C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 080WG Writing and Grammar for Non-Native Speakers of English III**4 cr. hrs. 4 periods (4 lec.)**

High intermediate-level academic writing and grammar skills. Includes rhetorical forms, writing process and conventions, sentence structure, grammar, study strategies, technology, and college resources.

Prerequisite(s): Placement into ESL 080WG; or completion of ESL 070WG and ESL 060RV and ESL 060CM with a C or better; or placement into ESL 70 level and completion of ESL 070WG with a C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Reading and Vocabulary course (RV) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 085CM Oral Communication for Non-Native Speakers of English IV**4 cr. hrs. 4 periods (4 lec.)**

Advanced-level academic communication skills for increased fluency and comprehension. Includes listening comprehension and retention, speaking and oral presentations, communicative appropriateness, and critical thinking skills.

Prerequisite(s): Placement into ESL 085CM; or completion of completion of ESL 080CM and ESL 070RV and ESL 070WG with a C or better; or placement into ESL 80 level and completion of ESL 080CM with a C or better.

Recommendation: Concurrent enrollment in an ESL Reading and Vocabulary course (RV) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 085RV Reading and Vocabulary for Non-Native Speakers of English IV**4 cr. hrs. 4 periods (4 lec.)**

Advanced-level reading and vocabulary skills for non-native speakers of English. Includes comprehension of narrative and informational texts, selections from college textbooks, vocabulary, written tasks, information literacy, study strategies, college resources, and a community of readers.

Prerequisite(s): Placement into ESL 085RV; or completion of ESL 080RV and ESL 070CM and ESL 070WG with a C or better; or placement by ESL assessment test into ESL 80 level and completion of ESL 080RV.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 085WG Writing and Grammar for Non-Native Speakers of English IV**4 cr. hrs. 4 periods (4 lec.)**

Advanced-level academic writing and grammar for non-native speakers of English. Includes rhetorical forms, writing process and conventions, sentence structure, grammar, study strategies, technology, and college resources.

Prerequisite(s): Placement into ESL 085WG; or completion of ESL 080WG and ESL 070RV and ESL 070CM with a C or better; or placement into ESL 80 level and completion of ESL 80WG.

Recommendation: Concurrent enrollment in an ESL Reading and Vocabulary course (RV) and ESL Oral Communication course (CM) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 088RV Reading and Vocabulary for Non-Native Speakers of English V**4 cr. hrs. 4 periods (4 lec.)**

High advanced-level reading and vocabulary skills for non-native speakers of English. Includes comprehension of narrative, informational, and college textbooks; vocabulary at a high advanced level, written tasks, information literacy, study strategies, college resources, and a community of readers.

Prerequisite(s): Placement into ESL 088RV; or completion of ESL 085RV and ESL 080CM and ESL 080WG with a C or better; or placement into ESL 85 level and completion of ESL 085RV with a C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Writing and Grammar course (WG) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 088WG Writing and Grammar for Non-Native Speakers of English V**4 cr. hrs. 4 periods (4 lec.)**

High advanced-level academic writing and grammar for non-native speakers of English. Includes rhetorical forms, writing process and conventions, sentence structure, grammar, study strategies, technology, and college resources.

Prerequisite(s): Placement into ESL 088WG; or completion of ESL 085WG and ESL 080RV and ESL 080CM with a C or better; or placement into ESL 85 level and completion of ESL 085WG with a C or better.

Recommendation: Concurrent enrollment in an ESL Oral Communication course (CM) and an ESL Reading and Vocabulary course (RV) according to previous course completion or ESL assessment test score.

Information: Prerequisites may be waived with consent of instructor. See an ESL instructor for details.

ESL 089EI Institute for American English and Culture II**1-15 cr. hrs. 1-15 periods (1-15 lec.)**

Advanced level English immersion program for non-English speaking international students. Includes English skills development in advanced oral communication, writing, reading, and vocabulary; and exploration of cross-cultural issues.

Information: Restricted registration. See an international advisor for further information. Extent of emphasis placed on specific activities and objectives in Program II will vary depending on audience and number of credits.

Fashion Design & Clothing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FDC 110 Clothing Construction I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

An introduction to basic clothing construction techniques designed for inexperienced sewers. Includes terminology, tools and equipment, garment pattern components, fabric components, interfacing, and construction sample and pressing techniques.

FDC 111 Clothing Construction II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of FDC 110. Intermediate principles of clothing construction. Includes planning the garment, preparation of garment pieces, assembly, unit production, and evaluation.

Prerequisite(s): FDC 110 with a B or better.

Information: Prerequisite may be waived with consent of instructor.

FDC 121 Flat Pattern Making I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the flat pattern method of pattern making for apparel production. Includes principles of pattern manipulation, practical applications, and evaluating the applications to a selected design project.

Recommendation: Completion of FDC 111 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 122 History of Clothing**3 cr. hrs. 3 periods (3 lec.)**

Introduction to clothing and personal decoration as a reflection of the wearer's culture, time and place. Includes definition of essential characteristics in the western world, evolution of clothing, geographical and chronological grouping, and areas of analysis through research and projects.

FDC 123 Computer Patternmaking I**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to patternmaking for apparel production using computer software. Includes measurements, creating a basic set of slopers, checking sloper fit, and basic pattern concepts.

Recommendation: Completion of FDC 111 and 121 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 126 Textiles**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Study of textile fibers, yarns, fabrication, characteristics, methods of coloration, printing, finishes, and influence on product performance. Includes fiber content, fabric construction, fabric swatches, finishes and techniques, and textile trends.

FDC 131 Fashion Styling**3 cr. hrs. 3 periods (3 lec.)**

Overview of the function of wardrobe in contemporary life. Includes U.S. and world trends, elements and principles of design applied to clothing selection and coordination, color, figure analysis, personal style, wardrobe evaluation, and hair and makeup as a key element in wardrobe and fashion styling.

FDC 132 Global Fashion and Culture**3 cr. hrs. 3 periods (3 lec.)**

Human behavior in relationship to clothing, body image, and self-concept. Includes global behavior and dress, the ritual of dress, global fashion for the masses, and life stages and clothing and image needs.

FDC 135 Fashion Event Planning and Production**3 cr. hrs. 3 periods (3 lec.)**

A survey of fashion direction, publicity and fashion event coordination. Includes development of an event, student fashion show production, and wrap up.

Recommendation: Completion of FDC 141 before enrolling in this course.

FDC 141 Introduction to Fashion Design**3 cr. hrs. 3 periods (3 lec.)**

Survey of the business of apparel manufacturing and fashion design. Includes history of the industry, careers in fashion, designing the garment, influences on design, and organization of a clothing line.

FDC 144 Fashion Drawing**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Technical drawing of a garment on the fashion figure. Includes working on original designs and presenting them in a portfolio. Also includes fabrics and how to render them as well as a basic knowledge of garment construction.

Information: Having prior drawing coursework would be beneficial, recommend ART 110 or 213 before enrolling in this course. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 196 Independent Studies in Fashion Design and Clothing**3 cr. hrs. 5- periods (2 lec., 3 lab)**

Independent projects for continuing individual development in fashion design and clothing under the guidance of a faculty member.

Information: May be taken three times for a maximum of 9 credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Students must have taken at least twelve (12) credits hours in FDC courses before enrolling in this course.

FDC 199 Co-op: Fashion Design and Clothing**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the work environment in the Fashion Apparel field. Includes the internship process, applying course work, oral and written communication skills, and self management on the job.

Corequisite(s):FDC 199WK

Information: Consent of instructor or department chair and successful completion of twelve (12) credit hours of FDC course work is required before enrolling in this course. May be taken four times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 199WK Co-op Work: Fashion Design and Clothing**1-5 cr. hrs. 5-25 periods (5-25 lab)**

A supervised work environment in the Fashion Apparel field. Includes completion of hours, knowledge of fashion industry job site, demonstration of aptitudes and abilities, journal/record of daily experiences and observations, and maintaining a written and digital contact list.

Corequisite(s):FDC 199

Information: Consent of instructor or department chair and successful completion of twelve (12) credit hours of FDC course work required before enrolling in this course. May be taken four times for a maximum of twenty credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 211 Clothing Construction III**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of FDC 111. Advanced techniques in construction of clothing. Includes pattern layout options, construction techniques and principles applied to special fabrics, fabric selection for specialty garments, and evaluation.

Prerequisite(s): FDC 111 with a B or better.**Information:** Prerequisite may be waived with consent of instructor.**FDC 212 Tailoring: Jackets****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Traditional and speed-tailoring methods for jackets utilizing advanced techniques and materials. Includes pattern alterations for jackets, buttonholes, welt pockets, shaping the interfacing, inner structure of jackets, and complete garment evaluation.

Prerequisite(s): FDC 211 with a grade of B or better.

Recommendation: Completion of FDC 112 with a grade of B or better before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite may be waived with consent of instructor.**FDC 213 Tailoring: Pants and Shirts****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Traditional and speed-tailoring methods for pants and shirts utilizing advanced techniques and materials. Includes pant construction, shirt construction, and completed garment evaluation.

Prerequisite(s): FDC 211 with a grade of B or better.

Recommendation: Completion of FDC 112 with a grade of B or better before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite may be waived with consent of instructor.**FDC 214 Bridal and Formal Wear****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced construction techniques applied to specialty fabrics for formal wear. Includes client vs. customer, fitting the client, creating the muslin, constructing the formal wear garment, and closing contracts with the client

Prerequisite(s): FDC 211 with a grade of B or better.

Recommendation: Successful completion of FDC 111 and 212 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite may be waived with consent of instructor.**FDC 215 Sewing with Knits****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Skills and techniques used in the construction of garments made from knit fabrics. Includes pattern selection, fabric selection, tools and equipment, pattern fit and alteration; layout, cutting, and marking; and construction techniques.

Prerequisite(s): FDC 111 with a B or better.

Recommendation: Completion of FDC 211 with a grade of B or better before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisite may be waived with consent of instructor.

FDC 221 Flat Pattern Making II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of FDC 121. Includes measurement, marking and fitting, review of sloper slash and spread methods of design, pattern preparation, determining garment patterns, garment construction, and evaluation of individual garment design and construction.

Prerequisite(s): FDC 121.

Recommendation: Students should have a grade of C or higher in the prerequisite course before enrolling in this course.

FDC 223 Computer Patternmaking II**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of FDC 123. Includes introduction to software pattern libraries, advanced computer flat patternmaking, and using computer-aided pattern design.

Prerequisite(s): FDC 123.

FDC 241 Draping**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Application of design principles using the draping method of fashion design to create an original garment on a dress form. Includes review of essential design principles, muslin preparation, determining garment patterns, applying fabrics to the dress form, garment construction, and evaluation of individual garment design and construction.

Recommendation: Completion of FDC 111 and 211 with a grade of B or better before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 245 Digital Fashion Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the use of computer software to design fashion and technical drawings. Includes the fashion work arena, features and applications used to create digital fashion drawings, vocabulary, terms and technical criteria, fashion software, and developing multiple color patterns and textures.

Recommendation: Completion of ART 100, FDC 111 and 144 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FDC 288 Portfolio Preparation**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Overview of the development and marketing of a professional portfolio. Includes definition and evaluation of coherent bodies of work, documentation of work, preparation of portfolio production, production of a portfolio, parts of a portfolio, and marketing.

Information: For advanced students who have completed coursework in their specific areas. Portfolio concentrations will be determined in a conference between student and instructor. Same as ART 288.

Finance

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FIN 200 Business Finance**3 cr. hrs. 3 periods (3 lec.)**

Fundamental principles of managerial finance in firms. Includes financial statements, common ratios, cash forecasting, time value of money, and investment decisions.

Prerequisite(s): ACC 211.

Fire Science

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FSC 101 Principles of Emergency Services**3 cr. hrs. 3 periods (3 lec.)**

Introduction to fire protection and emergency services. Includes career opportunities in fire protection and related fields, culture and history of emergency services, fire loss analysis, organization and function of public and private fire protection services, and fire departments as part of local government. Also includes laws and regulations affecting the fire service, fire service nomenclature, specific fire protection functions, basic fire chemistry and physics, introduction to fire protection systems, introduction to fire strategy and tactics, and life safety initiatives.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 110 Rope I**.75 cr. hrs. 1.25 periods (.5 lec., .75 lab)**

Introduction to basic rope rescue: safety, equipment, rope craft, anchors, mechanical advantage, belay systems, medical considerations, identifying terrain types, low angle evacuations, steep angle evacuations and steep angle rappel. Includes performance in rope craft, anchor construction, mechanical advantage construction, belay technique, patient packaging, low angle evacuations, and steep angle rappelling.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

FSC 111 Rope II**.75 cr. hrs. 1.25 periods (.5 lec., .75 lab)**

Continuation of FSC 110. Concepts, techniques, and skills for rope rescue areas: safety, ropecraft, advanced anchors, applied mechanical advantage, belay systems, self-rescue, and high angle pickoffs. Also includes knot passing through technical evacuation systems, rope rescue strategy, and tactics.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

FSC 112 Rope III**.75 cr. hrs. 1.25 periods (.5 lec., .75 lab)**

Continuation of FSC 111. Concepts, techniques, and skills for advanced rope rescue areas: safety, rope craft, anchors, applied mechanical advantage, belay systems, self-rescue, high angle pickoffs, knot passing through technical evacuation systems. Also includes rescue tactics and strategies relating to vertical rescues.

Prerequisite(s): FSC 111.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

FSC 120 Fire Behavior and Combustion**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the theories and fundamentals of fire behavior and combustion. Includes physical and chemical properties of fire, materials and their relationship to fire as fuel, and the use of water and other fire suppression agents and strategies.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 123 Building Construction Related to the Fire Service**3 cr. hrs. 3 periods (3 lec.)**

Introduction to components of building construction as related to firefighter and life safety. Includes elements of construction and structure design shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 124 Fire Prevention**3 cr. hrs. 3 periods (3 lec.)**

Introduction to fundamental concepts relating to the field of fire prevention. Includes history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use and application of codes and standards, plans review, fire inspections, fire and life safety education, and fire investigation.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 125 Hydraulics and Water Supply**2.5 cr. hrs. 3.5 periods (2 lec., 1.5 lab)**

Introduction to hydraulics and water supply in fire service. Includes theoretical foundations and principles of water use in fire protection, water distribution systems, and survey of hydraulic principles to analyze and to solve water supply problems.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 126 Fire Protection Systems in the Fire Service**3 cr. hrs. 3 periods (3 lec.)**

Introduction to fire protection systems in the fire service. Includes features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppressions systems, water supply for fire protection, and portable fire extinguishers.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 127 Principles of Emergency Services Safety and Survival**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the basic principles and history related to national firefighter life safety initiatives. Includes cultural and behavioral change, organizational health, safety profile, research investigation, national health and safety, risk management, and publication education of fire and life safety.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 128 Incident Safety Officer**1 cr. hrs. 1 periods (1 lec.)**

Concepts, techniques and skills for the Company Officer (CO) to function as the Safety Officer at fire department incident operations. Includes decision-making skills and personal safety (safety cues). Includes a focus on Safety Officer's responsibility in responding to incident scenes. Also includes incident-specific, scene-oriented application using safety scenarios.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

FSC 130 Strength and Fitness for the Fire Service**1 cr. hrs. 2 periods (.5 lec., 1.5 lab)**

Overview of fitness as it pertains to prospective firefighters. Includes endurance training, flexibility training, strength conditioning and use of equipment in Fire Incident Readiness Evaluation.

Information: Consent of instructor is required before enrolling in this course.

FSC 149 Fire Operations I**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Specialized classroom and practical experience in the techniques of firefighting. Includes the chemistry of fire, use of water and other agents, firefighting equipment and its uses, firefighting practices and safety.

Information: Completion of FSC 149 and 150 will help prepare the student for successful completion of State of Arizona Firefighter I & II practical evaluations. Only when taken as a part of the Pima Community College Fire Academy can students be concurrently enrolled in FSC 149 and 150.

FSC 150 Fire Operations II**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Continuation of FSC 149. Specialized classroom and practical experience in the practices and techniques of fire fighting. Includes principles of community fire defense, methods of entry, rescue, tools, apparatus, equipment, salvage, hydraulics, and fire extinguishment.

Prerequisite(s): FSC 149.

Information: Completion of FSC 149 and 150 will help prepare the student for successful completion of State of Arizona Firefighter I & II practical evaluations. Only when taken as a part of the Pima Community College Fire Academy can students be concurrently enrolled in FSC 149 and 150.

FSC 153 Hazardous Materials**1.5 cr. hrs. 2 periods (1.25 lec., .75 lab)**

Basic chemical concepts and their applications to the field of fire science. Includes classes and properties of hazardous materials; recognition and identification of materials; management of materials in transit, in use, and in storage; and management of hazardous materials incidents.

Information: Equivalent to State of Arizona's First Responder, 40-hour course.

FSC 160 Wildland Firefighting**2 cr. hrs. 3 periods (1.5 lec., 1.5 lab)**

Basic wildland firefighting. Includes locating and reporting the fire, incident operations and management, suppression equipment, fire behavior, size-up, methods of suppression, and safety.

Information: This course meets Arizona Center for Fire Service Excellence and Arizona Department of Forestry Guidelines for Wildland Firefighting Training.

FSC 163 Fire Apparatus and Equipment**3 cr. hrs. 3.5 periods (2.75 lec., .75 lab)**

Overview, concepts, and techniques to use fire equipment. Includes automotive apparatus (pumpers, aerial ladders, lift platforms, hose wagons, transports and utility vehicles), water towers, heavy auxiliary mechanical equipment and appliances, generators, compressors, rescue and forcible entry tools and cutting torches.

Prerequisite(s): FSC 149 and 150.

FSC 168 Special Hazard Tactical Problems**3 cr. hrs. 3 periods (3 lec.)**

Concepts and techniques designed for the experienced firefighter on successfully mitigating incidents that involve hazards that are not commonly experienced such as hazardous materials under fire conditions. Other examples may include a train derailment and biological attack. Also includes real-life incidents in order to learn from prior experiences, as well as practice with potential scenarios created from the surrounding area.

Prerequisite(s): FSC 153.

Information: Designed for experienced firefighters.

FSC 170 Fire Service Leadership**3 cr. hrs. 3 periods (3 lec.)**

Practical training for fire service leadership and supervision. Includes decision-making, problem solving, running a meeting, managing multiple roles, creativity, power, and ethics. Also includes situational leadership, delegation, coaching, and discipline.

Prerequisite(s): FSC 149.

Information: This course meets National Fire Academy (NFA) requirements for Leadership I, II, and III. FSC 170A, 170B, and 170C together constitute FSC 170.

FSC 170A Fire Service Leadership I**1 cr. hrs. 1 periods (1 lec.)**

Practical training for fire service leadership and supervision. Includes decision-making, problem solving, and running a meeting.

Prerequisite(s): FSC 149.

Information: This course meets National Fire Academy (NFA) requirements for Leadership I, II, and III. FSC 170A, 170B and 170C together constitute FSC 170.

FSC 170B Fire Service Leadership II**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 170A. Includes practical training for fire service leadership and supervision. Also includes managing multiple roles, creativity, power, and ethics.

Prerequisite(s): FSC 149.

Information: This course meets National Fire Academy (NFA) requirements for Leadership I, II, and III. FSC 170A, 170B, and 170C together constitute FSC 170.

FSC 170C Fire Service Leadership III**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 170B. Includes practical training for fire service leadership and supervision. Also includes situational leadership, delegation, coaching, and discipline.

Prerequisite(s): FSC 149.

Information: This course meets National Fire Academy (NFA) requirements for Leadership I, II, and III. FSC 170A, 170B, and 170C together constitute FSC 170.

FSC 173 Records and Reports**.5 cr. hrs. .5 periods (.5 lec.)**

Introduction to the elements and qualities of good report writing and comprehensive documentation. Includes form, style, and methodologies for writing various reports, techniques for developing an accurate narrative, and proper and improper conclusions. Also includes effective and correct use of grammar and the mechanics of writing.

Prerequisite(s): FSC 149.

FSC 174 Fire Investigation I**3 cr. hrs. 3 periods (3 lec.)**

Introduction to fundamental concepts of fire scene investigation. Includes emergency responder responsibilities and observations, conducting origin and cause interpretation, preservation of evidence and documentation, scene security, motives of the fire setter, and elements of fire dynamics.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 180 Driver Training for Fire Service**3 cr. hrs. 3 periods (3 lec.)**

Techniques for driving and handling fire vehicles. Includes safe operating procedures, defensive driving, apparatus inspection, training in emergency maneuvers, and the key components of the driving system.

Prerequisite(s): FSC 149, 150 and 151.

Information: Consent of instructor is required before enrolling in this course.

FSC 250 Principles of Fire and Emergency Services Administration**3 cr. hrs. 3 periods (3 lec.)**

Principles and concepts of administration for the fire and emergency services department. Includes relationship of government agencies to fire service, responsibility and authority, public policy, ethics, and leadership of the company officer.

Prerequisite(s): FSC 101 with a C or better.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

FSC 252 Fire Service Strategy and Tactics**3 cr. hrs. 3 periods (3 lec.)**

Principles and tactics of fire service ground control. Includes fireground factors and management, command operations and functions, life safety, personnel, equipment, and extinguishing agents.

Information: This class is in compliance with the Fire and Emergency Services Higher Education (FESHE) model curriculum.

This is the capstone course for degree.

FSC 260 Fire and Emergency Services Instructor**2 cr. hrs. 2 periods (2 lec.)**

Theoretical and practical training in developing and instructing fire and emergency services training programs. Includes an exploration of safety and legal issues, adult learning psychology, developing, planning and presenting effective instruction, evaluating student learning, teaching diverse learners, and use of instructional media.

Prerequisite(s): FSC 189.

Information: Consent of instructor is required before enrolling in this course concurrently with FSC 189. Meets the requirements for the Arizona State Fire Marshal Instructor I certification and NFPA 1041.

FSC 270 Leadership I for Fire Service Executives**1 cr. hrs. 1 periods (1 lec.)**

Concepts, techniques, and application of effective executive leadership. Includes leadership styles and characteristics, the effective executive, and leaders with vision, influence and motivation. Also includes being a change facilitator in a traditional organization, and the future of leadership.

Prerequisite(s): FSC 170.

FSC 271 Leadership II for Fire Service Executives**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 270. Includes organizational structure, roles and responsibilities, and organizational values. Also includes organizational vision, fiscal management and priorities, innovative organizations, and executive leadership.

Prerequisite(s): FSC 270.

FSC 272 Leadership III for Fire Service Executives**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 271. Includes communication skills, presentation skills, and verbal and writing skills at an executive level. Also includes interpersonal skills, labor relations, conflict management, ethical and unethical persuasion, and the media.

Prerequisite(s): FSC 271.

FSC 273 Leadership IV for Fire Service Executives**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 272. Includes the local fire department in relation to its city government, local policy development. Also includes legal aspects of the city and department procedures, relationships with organized labor, networking and community relations, relations with local and state fire service providers, and understanding the national and international fire service.

Prerequisite(s): FSC 272.

FSC 274 Leadership V for Fire Service Executives**1 cr. hrs. 1 periods (1 lec.)**

Continuation of FSC 273. Includes reasoning, thinking patterns, problem identification, and problem solving strategies. Also includes problem solving styles, decision-making models and approaches, personal decision making, and evaluation.

Prerequisite(s): FSC 273.

FSC 280 Fire Chief Preparation**4 cr. hrs. 4 periods (4 lec.)**

Preparation for professional fire personnel to become chief officers. Includes incident command, communication, and disaster management.

FSC 289 Current Issues in Fire Science**2 cr. hrs. 4 periods (1 lec., 3 lab)**

Study of current issues in the fire service. Includes developing and writing an independent, applied research project, utilizing various computer applications for formatting and design, and use of the Internet and library resources.

Recommendation: WRT 101 or an equivalent AGEC course that prepares student to complete the independent research project which requires college level writing skills.

Information: Completion of twenty credits in FSC prefix courses is required before enrolling in this course.

Fitness And Sport Science

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FSS 155 Athletic-Academic Success**2 cr. hrs. 2 periods (2 lec.)**

Survey of successful educational strategies in support of individual academic plans, career goals, and personal decision making. Includes taking the first step, goals and time, creative thinking, memory, note-taking skills, disarm tests, and communicating. Also includes health and nutrition, diversity, and resources.

Information: May be taken three times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FSS 182 Theory of Coaching Basketball**2 cr. hrs. 2 periods (2 lec.)**

Instruction in the theory of coaching basketball including techniques, methods, and ideas. Includes introduction, role of the coach, program development, and fundamentals and techniques.

Recommendation: Participation on a basketball team or league and some knowledge of the game before enrolling in this course.

FSS 183 Theory of Coaching Baseball**2 cr. hrs. 2 periods (2 lec.)**

Instruction in the theory of coaching baseball techniques and methods. Includes role of the coach, game management, baseball techniques, and improving performance.

Recommendation: Participation on a baseball team or league and some knowledge of the game before enrolling in this course.

FSS 184 Theory of Coaching Football**2 cr. hrs. 2 periods (2 lec.)**

Instruction in the theory of coaching football including techniques, methods, and ideas. Includes introduction, role of the coach, program development, and fundamentals and techniques.

Recommendation: Participation on a football team or league and some knowledge of the game before enrolling in this course.

FSS 189 Theory of Coaching Baseball II**2 cr. hrs. 2 periods (2 lec.)**

Continuation of FSS 183. Includes development of individual skills, development of team skills, game organization, and field situations.

Prerequisite(s): FSS 183

Recommendation: Participation on a baseball team or league and some knowledge of the game before enrolling in this course.

FSS 208 Group Fitness Instructor**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Gain knowledge necessary to prepare for a nationally accredited certification exam as a group fitness instructor. Includes introduction to group fitness class and to the certified group fitness instructor.

Prerequisite(s): Completion of or concurrent enrollment in: FSS 234 or 234A or 234B.

Information: This course requires physical activity and is intended for students pursuing the Fitness Professional certificate program.

FSS 218 Strength Training: Applied Principles and Techniques**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to resistance training principles. Includes history, anatomy and physiology, biomechanics and kinesiology, weight training principles and concepts, assessment and program development.

Prerequisite(s): Completion of or concurrent enrollment in: FSS 234 or 234A or 234B.

Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate program.

FSS 234 Fundamentals of Exercise Science**4 cr. hrs. 4 periods (4 lec.)**

Overview of various systems, reactions, and adaptations to exercise and movement. Includes muscular system and anatomy, nervous system, kinesiology, metabolism, principles of exercise training, adaptations to exercise training; and the cardiovascular, respiratory, and endocrine systems.

Corequisite(s)

Information: FSS 234A and 234B together constitute FSS 234.

FSS 234A Fundamentals of Exercise Science: Module A**2 cr. hrs. 2 periods (2 lec.)**

Overview of various systems, reactions, and adaptations to exercise and movement. Includes muscular system and anatomy, nervous system, kinesiology, metabolism, and principles of exercise training.

Information: FSS 234A and 234B together constitute FSS 234.

FSS 234B Fundamentals of Exercise Science: Module B**2 cr. hrs. 2 periods (2 lec.)**

Overview of various systems, reactions, and adaptations to exercise and movement. Includes exercise training, metabolism; and the cardiovascular, respiratory, and endocrine systems.

Information: FSS 234A and 234B constitute FSS 234.

FSS 236 Health Communication: Behavioral Change**2 cr. hrs. 2 periods (2 lec.)**

Communication skills and interviewing techniques for the fitness professional. Includes psychological theories, stages of change, and communication techniques.

Prerequisite(s): Completion of or concurrent enrollment in: FSS 234 or 234A or 234B.

Information: This course is intended for the Fitness Professional Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.

FSS 238 Introduction to Sports Injury Management**3 cr. hrs. 3 periods (3 lec.)**

Introduction to principles and techniques of preventing, recognizing, treating, and rehabilitating sports related injuries. Includes overview of sports injury management, recognition of common sports injuries, taping/wrapping techniques, principles of rehabilitation, and event preparation and risk management.

FSS 241 Nutrition for Exercise and Sport**3 cr. hrs. 3 periods (3 lec.)**

Examination of the relationship between nutrition and the human body. Includes introduction to nutrition, food habits, food selection for optimal exercise performance, diet analysis, eating disorders, and application to the athlete.

Information: This course is intended for the Fitness Professional Certificate program and professional development for coaches.

FSS 260 Business Practices for the Personal Trainer**2 cr. hrs. 2 periods (2 lec.)**

Practices associated with employment, creating, and managing a personal training business. Includes introduction to the fitness industry, creating your own personal training business, marketing and managing a personal training business; legal and professional responsibilities; and financing and accounting principles.

Information: This course is intended for the Fitness Professional Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.

FSS 262 Personal Trainer: Special Populations**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Exercise management for persons with chronic diseases. Includes medical model health appraisal, allied health profession referrals, chronic disease and disabilities, and functional exercise adaptations.

Prerequisite(s): FSS 218 and 276.

Information: This course is intended for students in the Fitness Professional Certificate program or for current physical education teachers or healthcare providers for continuing education credit. Students who are not currently certified as personal trainers must be in the second or later semester of the certificate program before enrolling in this course.

FSS 271 Sport Psychology**3 cr. hrs. 3 periods (3 lec.)**

Development of the basics of sports psychology. Includes psychological perspective, psychology skills for coaches, psychological skills for athletes, and implementing skills training.

Information: This course is intended for the Coaching Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.

FSS 272 Coach Techniques/Practices**3 cr. hrs. 3 periods (3 lec.)**

Coaching Techniques and Practices Concepts and strategies for teaching athletes both new skills and fine tuning of existing skills. Includes preparing to teach skills; presenting, developing, and maintaining skills; and cognitive processes involved in skills.

Information: Appropriate for coaches of athletes of all ages and skill levels.

FSS 273 Sport Physiology**3 cr. hrs. 3 periods (3 lec.)**

Principles of fitness training for peak performance. Includes sport physiology and the athlete, training for muscular and energy fitness, and designing training programs.

Information: This course is intended for the Coaching Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.

FSS 276 Exercise Testing and Prescription**3 cr. hrs. 3 periods (3 lec.)**

Assessment and interpretation of results for individualized programs designed for cardiovascular endurance, muscular strength and endurance, flexibility, and body composition. Includes exercise pre-participation health screening, assessment, interpretation of results, variables in program design, and exercise prescription.

Prerequisite(s): Completion of or concurrent enrollment in: FSS 234 or 234A or 234B.

Corequisite(s)

Information: This course is intended for students pursuing the Fitness Professional Certificate program.

FSS 277 Cardiovascular Training: Physiology and Programming**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Cardiovascular principles underlying assessment and program development. Includes risk assessment, development of goals, program development, and special considerations.

Prerequisite(s): Completion of or concurrent enrollment in: FSS 234 or 234A or 234B.

Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate program.

FSS 280 Weight Management Specialist**1 cr. hrs. 1 periods (1 lec.)**

Principles of behavior change, communication, psychology, and assessment for weight management success. Includes client assessment and communication, basic nutritional guidelines, and developing a plan.

Recommendation: Completion of FSS 236 or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: This course is intended for the Fitness Profprofessionals, coaches, and physical education teachers. Certificate, and continuing education for fitness professionals, coaches, and physical education teachers.

FSS 281 Capstone: Certified Personal Trainer**1 cr. hrs. 1 periods (1 lec.)**

Comprehensive examination of the different areas of study for the personal trainer. Includes exercise physiology, anatomy and kinesiology, nutrition, health screening and fitness assessments, programming, communication, special populations, injuries and emergency procedures, and legal and professional responsibilities.

Prerequisite(s): Successful completion of or current enrollment in: FSS 208, 218; 234 or 234A or 234B; 276, and 277.

Information: This course is intended for the Fitness Professional Certificate program. Prerequisites may be waived with consent of instructor. Upon successful completion of this course, students will be able to sit for a national exam.

FSS 291 Fitness and Sport Sciences Internship**3 cr. hrs. 7 periods (1 lec., 6 lab)**

Volunteer fitness professional field experience at an approved work site. Includes communication in the fitness facility, positive work attitudes and practices, fitness professional ethics, fitness professional systems, and professional development. Also includes employment strategies, final evaluation, employment interview, and fitness professional field experience.

Prerequisite(s): FSS 208, 218, 234 (or 234A and 234B), 236, 276, and 277 or concurrent enrollment.

Information: May be taken concurrently with above prerequisites in the last semester. Designed for students in their final semester of course work in the Fitness Professional Certificate program. This course requires approximately 90 hours of supervised internship time at two or more facilities, in addition to weekly one hour lecture periods.

FSS 296 Independent Study in Fitness and Sport Sciences**1-4 cr. hrs. 1-4 periods (1-4 lec.)**

Students independently continue their academic development in health, physical education, recreation, coaching, dance, or fitness, with the help of a faculty member.

Information: May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

FSS 299 Co-op: Fitness Professional**1 cr. hrs. 1 periods (1 lec.)**

Introduction to Cooperative Education which provides for success in securing and retaining a job related to subject area. Includes communication skills, time and energy management, stress and its management, and careers. Also includes placing yourself on the job market, principles, theories, and practices in the career field, and problems in the work situation.

Corequisite(s):FSS 299WK

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is intended for the Fitness Professional program and may be taken in the 2nd semester or later upon satisfactory completion of either FSS 276 or FSS 277.

FSS 299WK Co-op Work: Fitness Professional**2 cr. hrs. 10 periods (10 lab)**

A supervised cooperative work program for students in an occupation related area. Teacher-coordinators work with students and their supervisors.

Corequisite(s):FSS 299

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is intended for the Fitness Professional program and may be taken in the 2nd semester or later upon satisfactory completion of either FSS 276 or FSS 277.

Fitness and Wellness

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FAW 104F1 Conditioning: For Physically Demanding Jobs**1 cr. hrs. 2 periods (2 lab)**

Total body conditioning designed to prepare or enhance fitness required for physically demanding professions such as law enforcement, fire-fighting, or the military. Includes personal safety and preparation, fitness assessments and goal setting, strength and conditioning, and reassessment.

Information: This course is intended for individuals who are preparing for a job related physical fitness test or who have physically demanding jobs. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 104F2 Conditioning: Speed, Agility, and Quickness**1 cr. hrs. 2 periods (2 lab)**

Total body conditioning designed to enhance sport-related fitness for athletes or fitness enthusiasts. Includes personal safety and preparation, fitness assessments and goal setting, and conditioning.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is intended for individuals who have been participating in regular conditioning or sport activities.

FAW 105 Strength and Conditioning for Sport I**1 cr. hrs. 2 periods (2 lab)**

Sport-specific programs of strength and conditioning designed to enhance athletic performance. Includes focus on assessments, sport related drills, and sport conditioning.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 106F2 Individual Fitness: Running**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular conditioning through running and walk/run workouts intended for the beginning and intermediate runner. Includes an introduction to running, personal safety and preparation, components of training, the distances, and designing your training program.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is suitable for students who wish to run a few miles a week to those training for distances up to a marathon.

FAW 106F3 Individual Fitness: Swimming**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular conditioning through lap swimming. Includes essential water and personal safety, basic stroke review, techniques of endurance swimming, and personal fitness assessment and activity modifications.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is not suitable for students with a fear of water or who do not have some initial swimming skill.

FAW 106F4 Individual Fitness: Walking**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular conditioning, improved fitness, and weight management through various walking workouts. Includes introduction to walking, personal safety and preparation, components of training, correcting common faults, designing your training program, and race walking techniques.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 107 Strength and Conditioning for Sport II**2 cr. hrs. 4 periods (4 lab)**

Continuation of FAW 105. Includes further skill development of sport-specific advanced assessments, sport related drills, improvement in sport conditioning, and basic anatomy.

Prerequisite(s): FAW 105.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 110F1 Weight Training and Cardiovascular Fitness Level I**1 cr. hrs. 2 periods (2 lab)**

Introduction to a personalized fitness program using resistance, cardiovascular, and flexibility training. Includes orientation to the fitness facility, personal fitness assessment and activity modifications, and principles of basic program design.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is appropriate for students desiring to improve either health fitness or athletic performance and may NOT be taken concurrently with FAW 110F2 or FAW 110F3.

FAW 110F2 Weight Training and Cardiovascular Fitness Level II**2 cr. hrs. 4 periods (4 lab)**

A personalized fitness program using resistance, cardiovascular, and flexibility training. Includes review procedures of the fitness facility, personal fitness assessment and activity modifications, and principles of basic program design.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is appropriate for students desiring to improve either health fitness or athletic performance and may NOT be taken concurrently with FAW 110F1 or FAW 110F3. This course requires twice the time commitment in lab hours as FAW 110F1.

FAW 110F3 Weight Training and Cardiovascular Fitness Level III**2 cr. hrs. 4 periods (4 lab)**

Continuation of FAW 110F1 or FAW 110F2. Includes reviewing procedures of the fitness facility, personal fitness assessment and activity modifications, principles of program design, and written assignments.

Prerequisite(s): FAW 110F1 or FAW 110F2.

Information: May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. This course is appropriate for students desiring to improve either health fitness or athletic performance and may NOT be taken concurrently with FAW 110F1 or FAW 110F2. Prerequisites may be waived with consent of instructor. This course requires the same time commitment in lab hours as FAW 110F2 but includes written assignments.

FAW 112F1 Ballroom/Latin Dance**1 cr. hrs. 2 periods (2 lab)**

Introduction to ballroom and Latin dancing. Includes key components of each dance, floorwork/locomotor skills, dancing as a total activity, personal fitness assessment and activity modifications, and evaluation.

Information: Traditional ballroom dances covered are the six majors: Foxtrot, Waltz, East Coast Swing, Tango, Cha Cha, and Rumba. Other popular social dances that may be covered are the Salsa/Mambo, Night Club Two Step, and West Coast Swing. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 113F1 Belly Dance**1 cr. hrs. 2 periods (2 lab)**

Introduction to Egyptian, Turkish, and American belly dance with emphasis on foot placement and efficient execution of basic skills. Includes key components of belly dance, class protocol, dancing as a total activity, personal fitness assessment and activity modifications, and evaluation of basic belly dance skills.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 123F1 Salsa/Latin Dance**1 cr. hrs. 2 periods (2 lab)**

Introduction to salsa and other Latin dances with emphasis on basic steps, turns, and techniques to build confidence for dancing socially. Includes key components of each dance, floorwork and locomotor skills, and personal fitness assessment and activity modifications.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 128F3 Cardio Cross-Training**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular and muscular exercises generally set to music and performed rhythmically. Includes personal safety and preparation, personal fitness assessment and activity modifications, rhythmic cardio routines, and interval training.

Information: This course will utilize a variety of cardiovascular training modalities which may include floor exercise, steps, and interval training. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 128F6 Cardio Step**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular and muscular exercises set to music, performed rhythmically using basic to complex stepping patterns on the floor and on a raised platform. Includes personal safety and preparation, personal fitness assessment and activity modifications, and elements of rhythmic cardio routines.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 129F3 ZumbaÆ**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular and muscular endurance exercises inspired by Latin dance and music using ZumbaÆ techniques. Includes personal safety and preparation, personal fitness assessment and activity modifications, and elements of cardio routines.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 130 Boot Camp Style Circuit Training**1 cr. hrs. 2 periods (2 lab)**

Total body conditioning using various exercises, stations, and equipment which provides a cardiovascular challenge while emphasizing development of muscular strength and endurance. Includes personal safety and preparation, personal fitness assessment and activity modifications, and exercise techniques.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 131 Indoor Cycling**1 cr. hrs. 2 periods (2 lab)**

Cardiovascular conditioning set to music and performed on a stationary bicycle. Includes personal safety and preparation, key concepts, personal fitness assessment and activity modifications, and elements of indoor cycling training.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 132 Kickboxing**1 cr. hrs. 2 periods (2 lab)**

Total body conditioning using various kickboxing exercises, stations, and equipment that provide a cardiovascular challenge while emphasizing development of muscular strength and endurance through upper and lower body striking activities. Includes personal safety and preparation, personal fitness assessment and activity modifications, and kickboxing skill development.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Students are expected to provide their own bag gloves or hand wraps for contact with the bags and pads.

FAW 134F1 Pilates**1 cr. hrs. 2 periods (2 lab)**

Introduction to the six core principles of Pilates in individual exercises and sequences of movements. Includes key components of Pilates integrative practice, and personalizing one's practice. Also includes emphasis on total body conditioning to improve strength, flexibility, coordination, proper body alignment, breath control, and overall body awareness.

Information: This course does not use reformers and is primarily mat based. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 136 Strength and Flexibility**1 cr. hrs. 2 periods (2 lab)**

Muscular strength, endurance, and flexibility exercises designed to improve total body fitness with exercises generally set to music. Includes personal safety and preparation, fitness assessment and activity modifications, and exercise techniques.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 138F1 Yoga**1 cr. hrs. 2 periods (2 lab)**

Introduction to stress reduction through yoga. Includes key components of yoga, essential movements and postures, mind-body practice, personalizing one's practice, and personal fitness assessment and activity modifications.

Information: There are many styles of yoga and the specific philosophy offered in a given section will reflect that of the instructor; however, this course is gentle to moderate intensity. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 148F1 Golf**1 cr. hrs. 2 periods (2 lab)**

Fundamentals of golf intended for the novice or player with limited experience. Includes key components of each shot, essentials for game play, game management, and personal fitness assessment.

Information: A required range and/or course fee will be payable to the golf course. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 155F1 Tennis**1 cr. hrs. 2 periods (2 lab)**

Fundamentals of tennis intended for the novice or player with limited experience. Includes key components of tennis, fundamental stroke development, game management, and personal fitness assessment.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 158 Sports Officiating**3 cr. hrs. 3 periods (3 lec.)**

Familiarization with and application of the rules of various sports from the standpoint of the official. Includes introduction to the art of officiating, discussion of interpretation of rules for each sport, officiating duties, and guest officials and coaches from each sport. Also includes field experience at Pima team scrimmages.

Recommendation: WRT 090 or 096 or satisfactory score on the writing assessment test. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 163 Self Defense for Women**1 cr. hrs. 2 periods (2 lab)**

Introduction to the mental attitudes and physical skills needed to defend oneself against an attack. Includes knowing your surroundings, basic safety location techniques, and defensive physical skills.

Information: May be taken three times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 165 Tai-chi Chuan**1 cr. hrs. 2 periods (2 lab)**

Fundamentals of T'ai-chi chuan, a form of martial arts. Includes an introduction, principles, T'ai-chi for a healthier lifestyle, solo exercises, self-defense, and personal fitness assessment and activity modifications.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 166 Football**1 cr. hrs. 2 periods (2 lab)**

Fundamental football skills for the student athlete or recreational player. Includes key component of football, personal safety and preparation, individual skills, and team skills.

Information: May be taken two times for a maximum of two credit hours. If course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 167 Baseball I**1 cr. hrs. 2 periods (2 lab)**

Fundamental baseball skills for the student athlete or recreational player. Includes key components of baseball, personal safety and preparation, individual skills, and team skills.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 168 Basketball I**1 cr. hrs. 2 periods (2 lab)**

Fundamental basketball skills for the student athlete or recreational player. Includes key components of basketball, personal safety and preparation, individual skills, and team skills.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 169 Baseball II**1 cr. hrs. 2 periods (2 lab)**

Continuation of FAW 167. Includes advanced skills for the student athlete with a minimum of intermediate baseball skills.

Prerequisite(s): FAW 167.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 170 Soccer I**1 cr. hrs. 2 periods (2 lab)**

Fundamental soccer skills for the student athlete and recreational player. Includes key components of soccer, personal safety and preparation, individual skills, and team skills and systems.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 171F1 Softball I**1 cr. hrs. 2 periods (2 lab)**

Fundamental fast pitch softball skills for the student athlete or recreational player. Includes key components of fast pitch softball, individual skills, and team skills.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Students must supply their own gloves.

FAW 172 Softball II**1 cr. hrs. 2 periods (2 lab)**

Continuation of FAW 171F1. Includes advanced fast pitch individual and team softball skills for the student athlete and the recreational player with a minimum of intermediate softball experience.

Prerequisite(s): FAW 171F1.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Students must supply their own gloves.

FAW 173 Volleyball**1 cr. hrs. 2 periods (2 lab)**

Fundamental volleyball skills for the student athlete or recreational player. Includes personal safety and preparation, individual skills, and team skills and systems.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 174 Soccer II**1 cr. hrs. 2 periods (2 lab)**

Continuation of FAW 170. Includes further development of individual skills, and skills and tactics for the student athlete or recreational player with a minimum of intermediate soccer skills.

Prerequisite(s): FAW 170.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 176 Basketball II**1 cr. hrs. 2 periods (2 lab)**

Continuation of FAW 168. Includes advanced basketball skills, practice, and game planning for the student athlete or recreational player.

Prerequisite(s): FAW 168.

Information: May be taken two times for a maximum of two credits hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

FAW 182 Healthy Living and Mind-Body Training**3 cr. hrs. 3 periods (3 lec.)**

Promotion of self-awareness of our daily lifestyle choices that impact our health and well-being. Includes dynamic alignment training, postural assessment, mind-body (somatic) training, wellness model, nutrition, relaxation, and self-care techniques.

FAW 183 Health Coach Professional**3 cr. hrs. 3 periods (3 lec.)**

Introduction to health coach professional and methods of facilitating behavioral change. Includes communication strategies for effective coaching, nutrition and physiological science, client screening and assessment, and nutrition and exercise program design and implementation.

FAW 184 Health, Wellness, and Physical Activity**3 cr. hrs. 3 periods (3 lec.)**

Development of skills for personal lifestyle changes that promote health, wellness, and fitness over a lifetime. Includes physical activity, special considerations, nutrition and body composition, and stress and health.

FAW 291 Fitness and Wellness Internship**2 cr. hrs. 5 periods (.5 lec., 4.5 lab)**

Volunteer health coach and employee wellness field experience at approved work sites. Includes positive work attitudes and practices, professional ethics, and employment strategies.

Prerequisite(s): Completion of or concurrent enrollment in: FAW 182, 183, 184, FSS 234 (or 234A and 234B), FSN 154 or FSS 241.

Information: May be taken concurrently with above prerequisites in the last semester. Designed for students in their final semester of course work in the Fitness and Wellness Specialist Certificate program.

Food Science & Nutrition

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FSN 127HC Human Nutrition and Biology: Honors**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of nutrition presented in the context of human biology. Includes chemistry, digestion, absorption, and metabolism of nutrients. Also includes biological and nutritional perspectives on various health issues such as cardiovascular disease, hypertension, cancer, diabetes, and osteoporosis, including genetic and epigenetic effects. Also covers analysis of scientific studies relating to nutrition. Also includes additional Honors content.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Same as BIO 127HC. Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using the highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

FSN 127IN Human Nutrition and Biology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Principles of nutrition presented in the context of human biology. Includes chemistry, digestion, absorption, and metabolism of nutrients. Also includes biological and nutritional perspectives on various health issues such as cardiovascular disease, hypertension, cancer, diabetes, and osteoporosis, including genetic and epigenetic effects. Also covers analysis of scientific studies relating to nutrition.

Information: Same as BIO 127IN.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

FSN 154 Nutrition**3 cr. hrs. 3 periods (3 lec.)**

Examination of nutrients and their use by the body for growth and development. Includes maintenance of health through proper diet.

Gen Ed: Meets AGEC - OTHER; Meets CTE - OTHER.

French

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FRE 101 Elementary French I

4 cr. hrs. 4 periods (4 lec.)

Introduction to French. Includes basic listening, reading, and writing skills and cultural and geographic awareness.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

FRE 102 Elementary French II

4 cr. hrs. 4 periods (4 lec.)

Continuation of FRE 101. Includes further development of oral and written forms, pronunciation, and additional grammatical structures, interpersonal transactions, and geographical and cultural distinctions. Also includes an emphasis on balancing more complex structures with active communication.

Prerequisite(s): FRE 101.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

FRE 201 Intermediate French I

4 cr. hrs. 4 periods (4 lec.)

Continuation of FRE 102. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and using a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking and listening.

Prerequisite(s): FRE 102.

Information: Prerequisite(s) may be waived with two years of high school French. This course will be conducted primarily in French.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

FRE 202 Intermediate French II

4 cr. hrs. 4 periods (4 lec.)

Continuation of FRE 201. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking, and listening. Also includes reading selections from authentic media, advanced conversation and discussions, and compositions using intermediate grammar structures.

Prerequisite(s): FRE 201.

Information: This course will be conducted primarily in French.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

FRE 296 Independent Study in French

1-4 cr. hrs. 1-4 periods (1-4 lec.)

Independent study in French literature, grammar, or special projects under the supervision of an instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Game Design

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GAM 101 Game Design I

4 cr. hrs. 4 periods (4 lec.)

Textual analysis of game play. Includes history of games, defining play, use of rules, impact of game on culture, psychological impact of games, and working in the game industry.

GAM 102 Game Design II

4 cr. hrs. 5 periods (3 lec., 2 lab)

Continuation of GAM 101. Includes the role of the game designer, structure of the game, formal and dramatic elements of the game, game play fun, and storyboard development.

Prerequisite(s): GAM 101.

GAM 120 Introduction to Game Programming**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Introduction to game engine programming. Includes Unity game engine, C# language features, input interaction, object-oriented programming, using bitmaps, a particle engine, and integrating 3D models.

Prerequisite(s): GAM 101.

Corequisite(s)

Recommendation: Previous or concurrent enrollment in MAT 145 (preferred) or MAT 141 or MAT 142 (or higher). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

GAM 150 Game Programming I**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Iterative game programming using Unity and intermediate C# features. Includes spatial math, version control, serialization, real-time mesh manipulation, character animation, rendering, and creating multiple games.

GAM 151 Game Programming II**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of GAM 150. Intermediate concepts of game programming using managed Direct X and C#. Includes graphic concepts, High Level Shader, sound, and user input.

Prerequisite(s): GAM 150.

GAM 201 Game Design III**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Continuation of GAM 102. Includes conceptualizing a game, prototyping, playtesting; functionality, completeness, and balance; controls and interface, design team, and conceptualization.

Prerequisite(s): GAM 102 or 120.

GAM 218 Game Design Portfolio Capstone**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Production of a professional quality game design portfolio with a focus on a comprehensive capstone project. Includes production of a digital art portfolio, development of a game trailer, playable prototype, project management, current digital arts tools and processes, resumes and interviews, and presentation of a portfolio.

Prerequisite(s): GAM 120 or 201.

GAM 296 Independent Study in Game Design**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed projects in game programming at the advanced level. Includes defining a project, tool and medium, conceptualize and execute a project, professional environment, and completing and critiquing the project.

Recommendation: Completion of CIS 142, CIS 278 and GAM 150 is highly recommended before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gender & Women's Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GWS 100 Introduction to Feminist Studies**3 cr. hrs. 3 periods (3 lec.)**

Interdisciplinary survey and analysis of women's issues in structured inequalities and globalization. Includes feminist studies: study of gender, culture, and society; theoretical approaches to gender; learning gender socialization; contemporary feminist issues: socialization, work, and family; body and health issues; gender issues and intimacy; gender and the economy; gender, politics, government, and the military; gender, education, creativity, and language; and gender and spirituality.

GWS 201 La Chicana**3 cr. hrs. 3 periods (3 lec.)**

Interdisciplinary analysis of Chicanas/Mexicanas' status in the United States. Includes Chicana/Mexicana scholarship and Social Justice Movements, and Chicana/Mexicana feminism in the Southwest, Chicana/Mexicana community empowerment, Chicanas/Mexicanas on the U.S.-Mexico border.

Information: Same as MAS 201.

GWS 202 Sexuality, Gender and Culture**3 cr. hrs. 3 periods (3 lec.)**

Anthropological examination of gender identity, roles, relations, and variation. Includes theories and methods of the anthropology of sex and gender, historical origins and development of the sub-discipline, and sex, gender and sexuality in cross-cultural, ethnographic perspective. Also includes selected case studies and cross-cultural frameworks for analysis.

Information: Same as ANT 202.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

General Technical Writing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GTW 101 Writing for Trades and Technical Occupations**3 cr. hrs. 3 periods (3 lec.)**

Applied technical reading and writing components necessary for trade and industrial occupations. Includes review of grammar; spelling and sentence building basics; reading trade and technical texts critically; and practical application of writing including writing for clarity, accuracy and professionalism as they relate to job functions, occupational requirements and effective communications across trades.

Prerequisite(s): ICS 079 with a B or better, or placement into WRT 090.

Gen Ed: Meets CTE - COMM.

General Technologies Math

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GTM 105 Applied Technical Mathematics**3 cr. hrs. 3 periods (3 lec.)**

Applied geometry and trigonometry operations. Includes review of basic math operations, review of pre-algebra, elements of geometry, plane trigonometry, and practical applications.

Prerequisite(s): With a grade of C or better: ICS 081 or MAT 086 or completion of module 15 in MAT 089A or satisfactory score on the Mathematics assessment test.

Gen Ed: Meets CTE - M&S.

GTM 105V Applied Technical Mathematics for Aviation**3 cr. hrs. 3 periods (3 lec.)**

Applied geometry and trigonometry operations. Includes review of basic math operations, charts and graphs, review of pre-algebra, elements of geometry, plane trigonometry, and aviation practical applications.

Prerequisite(s): With a grade of C or better: ICS 081 or MAT 086 or completion of Module 15 in MAT 089A or satisfactory score on the Mathematics assessment test.

Gen Ed: Meets CTE - M&S.

Geography

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GEO 101IN Physical Geography: Weather and Climate**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the physical elements. Includes earth-sun relationships, atmospheric processes, global heat balance, global pressure and temperature patterns, annual weather and climate patterns, weather and air pollution, urban influences on weather and climate, and climatic change. Also includes weather and people, wave cyclones of middle latitudes, weather maps and weather prediction, basic ecological principles, and energy.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

GEO 102IN Physical Geography: Land Forms and Oceans**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the surface of the earth and the forces of nature that shape it. Includes continental drift and plate tectonics, geomorphic processes, the hydrologic cycle, pollution esthetics of landforms, recreation and other utilization, and map reading and interpretation.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

GEO 103 Cultural Geography**3 cr. hrs. 3 periods (3 lec.)**

Examination of the human world from a geographic perspective. Includes geography as a discipline, culture and human geography, the changing Earth, descriptive fundamentals of population geography, migration, and geography of language and religion. Also includes rural traditions and livelihoods, urban geography, economic changes and industrialization, as well as political and medical geography.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

GEO 104 World Regional Geography**3 cr. hrs. 3 periods (3 lec.)**

Geographic concepts and information organized by conventional regions and nations. Includes geographic perspectives on the physical environment, and aspects of culture such as: population, language, religion, political systems, economic development, health, and history.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

GEO 265 Mapping Concepts**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the practical use of maps. Includes map basics and attributes, scales and measurements, direction, geographic coordinate systems, relief and contours, and aerial photography.

Information: Same as ANT/ARC/GIS 265.

GEO 267 Introduction to Geographic Information Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to geographic information systems (GIS) using the industry standard ESR software. Includes data types, data management, coordinate systems and map production. Also includes understanding attribute data, basic editing and queries using SQL.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Prerequisite may be waived with consent of instructor. Basic computer skills are required before enrolling in this course. Same as GIS 267.

GEO 296 Independent Studies in Geography**.5-6 cr. hrs. 1-12 periods (.25-3 lec., .75-9 lab)**

Students independently continue their studies in Geography under the supervision of a faculty member.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Geology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GLG 101IN Physical Geology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the physical aspects of the Earth's crust. Includes scientific measurements, maps, and the scientific method; hands-on identification and assessment of rocks and minerals; and introduction to geology, earth composition, surface processes, subsurface processes, investigative tools, geologic structures, geologic resources, and earth history. Also includes a field trip to observe and interpret geologic processes in a natural setting.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

GLG 102IN Historical Geology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to the physical, chemical, and biological history of the Earth, including hands-on identification and classification of major fossil groups according to their phyla, ages, and ecosystems. Includes scientific measurements, maps, scientific method, history of historical geology (Uniformitarianism, Catastrophism); identification and interpretation of rocks and sedimentary textures, environments, and structures; geologic time, the evolution of life, planetary evolution, plate tectonics, evolution of the Earth's surface (including the physical environments, resources, and life of the Precambrian, Paleozoic, Mesozoic, and Cenozoic); and human evolution and human impacts. Also includes a field trip to observe rocks and structures and interpret geologic history and fossils in a natural outdoor setting.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

GLG 110IN Geological Disasters and Environmental Geology**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Survey of geologic processes with respect to the interactions between humans and the Earth. Includes identifying geologic hazards, understanding the challenges of predicting and preventing natural disasters, and mitigating and preventing pollution; the relationship of natural resources to population distribution, resource usage and impacts, and waste management and pollution prevention; and the hydrologic cycle, plate tectonics, volcanoes, earthquakes, and catastrophic events, such as floods, fires, landslides, earthquakes, and volcanic action. Also includes water quality, resource availability, toxic and radioactive waste disposal problems and proposed solutions, global climate change, sea level rise, greenhouse gases, and extreme weather. Also includes a field trip to investigate local geologic hazards.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

GLG 296 Independent Studies in Geology**.5-3 cr. hrs. 1.5-9 periods (1.5-9 lab)**

Independent studies, projects, and/or laboratory exercises in geology. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Geospatial Information Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GIS 181 Global Positioning Systems Basics**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the use of Global Positioning Systems (GPS) receivers in a field setting for non-technical applications. Includes GPS vocabulary, operation, field data collection and data transfer. Also includes using equipment, resources and facilities of the Archaeology Centre.

Information: Same as ANT/ARC 181.

GIS 265 Mapping Concepts**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the practical use of maps. Includes map basics and attributes, scales and measurements, direction, geographic coordinate systems, relief and contours, and aerial photography.

Information: Same as ANT/ARC/GEO 265.

GIS 267 Introduction to Geographic Information Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to geographic information systems (GIS) using the industry standard ESR software. Includes data types, data management, coordinate systems and map production. Also includes understanding attribute data, basic editing and queries using SQL. Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Prerequisite may be waived with consent of instructor. Basic computer skills are required before enrolling in this course. Same as ARC/GEO/GIS 267.

GIS 281 Global Positioning Systems**1 cr. hrs. 3 periods (3 lab)**

Introduction to the technical use of Global Positioning Systems (GPS) receivers in a field setting. Includes review of GPS vocabulary and concepts, comprehensive initialization of handheld GPS receivers, data collection with handheld GPS, the use of mapping software with data from handheld GPS, concepts of differential GPS, operation of and field data collection with precision GPS, and use of software packages for differential correction and map production. Also includes using equipment, resources and facilities of the Archaeology Centre. Prerequisite(s): ANT/ARC/GIS 181

Information: Prerequisite may be waived with equivalent experience or consent of instructor. Same as ANT/ARC/GIS 281.

GIS 284 Computer Cartography and CAD**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Cartographic techniques and hardware for computer generation of maps. Includes an introduction to: methods and techniques, and application projects.

Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment.

Information: Same as ANT/ARC 284.

GIS 286 Electronic and Digital Field Mapping**3 cr. hrs. 6 periods (1.5 lec., 4.5 lab)**

Overview of the creation of electronic and digital maps in a field setting. Includes an introduction to instrument operation, field data, producing maps, and computer applications.

Prerequisite(s): ANT/ARC 265 and ANT/ARC/GIS 281.

Recommendation: Consult instructor for alternative prerequisite(s).

Information: Same as ANT/ARC 286.

German

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GER 101 Elementary German I**4 cr. hrs. 4 periods (4 lec.)**

Introduction to German. Includes basic listening, reading, and writing skills, and cultural and geographic awareness.

Gen Ed: Meets AGEC - OTHER; Meets - CTE - A&H.

GER 102 Elementary German II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of GER 101. Includes further development of oral and written forms, pronunciation, and additional grammatical structures, interpersonal transactions, and geographical and cultural distinctions. Also includes an emphasis on balancing more complex structures with active communication.

Prerequisite(s): GER 101.

Gen Ed: Meets AGEC - OTHER; Meets - CTE - A&H.

GER 201 Intermediate German I**4 cr. hrs. 4 periods (4 lec.)**

Continuation of GER 102. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking, and listening. Also includes reading selections from authentic media, advanced conversation and discussions, and compositions using intermediate grammar structures.

Prerequisite(s): GER 102 with a grade of C or better.

Information: Two years of high school German may fulfill prerequisite.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE - A&H and G.

GER 202 Intermediate German II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of GER 201. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking, and listening. Also includes reading selections from authentic media, advanced conversation and discussions, and compositions using intermediate grammar structures.

Prerequisite(s): GER 201 with a grade of C or better.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE - A&H and G.

GER 296 Independent Study in German**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent study in German literature, or special projects under the supervision of an instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Global Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

GLS 110 Introduction to Cities and Global Society**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the study of the urban environment. Includes exploring the city, city form and city culture, urban diversity, and urban and global dilemmas and possible solutions. Also includes a special emphasis on understanding cities and the impact of globalization at community, national, and international levels.

Information: Same as SOC 110.**Gen Ed:** Meets AGEC - SBS and G; Meets CTE - SBS and G.

Health Care

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HCA 100 Strategies for Academic Success**1 cr. hrs. 1 periods (1 lec.)**

Introduction to strategies to aid in acclimation and success for health related professions students throughout their respective program. Includes outline and review of program pathway, strategies for success, learning styles, stress management, critical thinking, and professionalism.

Information: Students must be admitted to the selected program and obtain consent of the program department before enrolling in this course.**HCA 103 Orientation to Pharmacology****3 cr. hrs. 3 periods (3 lec.)**

An overview of the principles of pharmacology for professional allied health care providers. Includes medication sources, classifications and actions, oversight by the government, administration, and safety precautions. Also includes standard mathematical formulas for converting among measuring systems to assure accuracy in medication dosage and preparation.

HCA 119 Orientation to Human Anatomy and Physiology**3 cr. hrs. 3 periods (3 lec.)**

Orientation to basic anatomy and physiology appropriate for the health care setting. Includes structural organization of the human body, body systems, major organs, and common pathology. Also includes CLIA waived testing and analysis used to determine common disease.

HCA 152 Advanced Cardiovascular Life Support (ACLS)**1 cr. hrs. 1 periods (1 lec.)**

The Advanced Cardiovascular Life Support (ACLS) provider course is designed for healthcare providers who either direct, or participate in the management of, cardiopulmonary arrest or other cardiovascular emergencies. Includes didactic instruction and active participation in simulated cases, enhance skills in the recognition and intervention of cardiopulmonary arrest, post-cardiac arrest, acute arrhythmia, stroke, and acute coronary syndromes (ACS).

Prerequisite(s): RTH 123, 123LB, 124, and 162.**Corequisite(s):** RTH 135LC**Information:** Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. A current Basic Life Support (BLS) certification from the American Heart Association is required for enrollment in this course.

Health Information Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HIT 100 Introduction to Health Information Management

3 cr. hrs. 3 periods (3 lec.)

An overview of health care delivery systems and mechanisms in the U.S. Includes the medical model of healthcare and delivery, public policy, healthcare finance and regulation, data content structures and standards, information protection, informatics, and the role of leadership.

HIT 101 Introduction to ICD Coding

3 cr. hrs. 4 periods (2 lec., 2 lab)

Introduction to principles and application of the International Classification of Disease (ICD) coding system. Includes overview of coding, introduction to ICD 10th Revision Clinical Modifications/Procedural Coding System (10-CM/PCS). Includes coding conventions, coding guidelines, hospital inpatient, outpatient and physician office coding, and overview of HCPCS.

Recommendation: HIT 105 and BIO160IN. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

HIT 102 CPT Coding

3 cr. hrs. 4 periods (2 lec., 2 lab)

Introduction to principles and application of Current Procedural Terminology (CPT) Coding System. Includes overview of CPT and CPT coding. Also includes the following CPT sections: Anesthesia, Evaluation and Management, Medicine, Radiology, Surgery, and Pathology and Laboratory.

Recommendation: Completion of HIT 105 and BIO 160IN. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

HIT 105 Medical Terminology

3 cr. hrs. 3 periods (3 lec.)

Terminology used in the medical field. Includes word parts and forms, terms pertaining to the body as a whole, anatomy and structural organization of the body. Also includes terminology of body systems, organs and function including disease processes and symptoms, laboratory tests, clinical procedures and use of medical dictionaries and other resource materials for research and practice.

HIT 108 Health Information Employment Policies

1 cr. hrs. 2.5 periods (.5 lec., 2 lab)

Prepares students for employment in Health Information Technology. Includes employer requirements for CPR training, employment resources, resume development, Privacy and Security, immunizations, and the criminal background check.

HIT 112 Health Insurance and Medical Billing

3 cr. hrs. 3 periods (3 lec.)

Overview and principles of the basics of health insurance and medical billing. Includes principles of health insurance and medical billing, health insurance contracts, claims process, insurance terminology, abbreviations, and symbols. Also includes diagnostic and procedural coding (with emphasis on medical terminology, anatomy and physiology), client eligibility and reimbursement processes, health care statistics, and supervision and management.

Prerequisite(s): HIT 101 and 102.

Recommendation: Completion of HIT 100 and 105 are recommended before enrolling in the course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

HIT 125 Pathophysiology and Pharmacology for HIT

3 cr. hrs. 4 periods (2 lec., 2 lab)

Principals of pharmacology and pathophysiology. Includes disease processes according to body system, causes, diagnosis and treatment with emphasis on drug actions and classifications. Includes pharmacotherapy and laboratory findings; basic concepts in pharmacology, pharmacokinetics, dosage calculations, and pharmacology as applied to disease and conditions distinct to each body system.

HIT 150 Introduction to Health Management Information Systems

3 cr. hrs. 4 periods (2 lec., 2 lab)

Introduction to Health Information Management Systems (HIMS). Includes overview of electronic health record, software, administrative management, scheduling and patient management, HIPAA, and HIM roles and functions. Also includes clinical inputs and outputs; coding; billing and reimbursement; clinical decision support systems and quality improvement; personal health records; patient portals; and HIMS adoption and implementation.

HIT 175 Health Information Statistics and Research**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Principles of health information statistics and research. Includes a statistical approach to healthcare, sources of data collection, data sources and databases. Also includes health care research processes and strategies, project development, data collection, design and analysis, report structure and presentation.

HIT 201 Advanced ICD Coding**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced use of references and source documents for outpatient and inpatient hospital coding. Includes interpretation of International Classification Diseases (ICD), Clinical Modification (CM), and Procedural Coding System (PCS) guidelines relative to application of inpatient and outpatient diagnostic and procedural codes.

Prerequisite(s): HIT 101 and 102.

HIT 202 Advanced Classification Systems Applications**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Advanced application and demonstration of coding skills. Includes use of references and source documents for International Classification of Diseases Clinical Modification and Procedural Coding System (ICD-CM and PCS), Current Procedural Terminology (CPT) coding and evaluation, Uniform Hospital Discharge Data Set (UHDDS), and Diagnostic-Related Group (DRG) guidelines and regulations.

Prerequisite(s): HIT 101 and HIT 102.

HIT 210 Medical Quality Assurance and Supervision**3 cr. hrs. 3 periods (3 lec.)**

Principles of medical quality assurance and supervision. Includes health information management skills and human resource roles and responsibilities. Also includes HIPAA regulations, accreditation and licensure, organizational models, technologies and planning for a professional career in health care.

Prerequisite(s): HIT 100 and 105.

HIT 211 Medicolegal Aspects in Health Information Management**3 cr. hrs. 3 periods (3 lec.)**

Regulatory requirements in health care and application of general principles of law in health information management and legal proceedings. Includes American legal system, court systems and legal procedures, principles of liability, patient record requirements, access to health information, patient rights and confidentiality. Also includes judicial process of health information, specialized patient records, risk management and quality management, HIV information, computerized patient records, health care fraud and abuse, and ethics.

Prerequisite(s): HIT 100 and 105.

HIT 225 Advanced Health Management Information Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Continuation of HIT 150. Applied concepts in Health Information Management (HIM) Systems. Includes the evolution of healthcare legislation and standards; and health records content and documentation. Also includes electronic health record system legislation and implementation; and health information technologies and data analytics.

Prerequisite(s): HIT 150.

HIT 290 Health Information Technology Internship**4.5 cr. hrs. 12.5 periods (.5 lec., 12 lab)**

Health Information Technology Professional Practice experience (PPE) includes meaningful engagement within the healthcare industry through an approved work site or project-based study. Includes HIT skills development, professional networking and communications, goal setting, employment strategies, values and ethics, and use of health information systems and resources.

Prerequisite(s): HIT 105 and 108.

Information: Consent of instructor is required before enrolling in this course. Designed for students in their final semester of course work in the Health Information Technology option. Students complete 180 clock hours of supervised placement at approved work site (or project-based study).

History

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HIS 101 Introduction to Western Civilization I**3 cr. hrs. 3 periods (3 lec.)**

Pre-history to the Wars of Religion, a period extending from 10,000 BCE to 1648 CE. Includes transition from pre-historic to the historic period, Greco-Roman world, Early, Central, and Late Middle Ages, and Renaissance and Reformation.

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 101HC Introduction to Western Civilization I: Honors**3 cr. hrs. 3 periods (3 lec.)**

Pre-history to the Wars of Religion, a period extending from 10,000 BCE to 1648 CE. Includes transition from pre-historic to the historic period, Greco-Roman world, Early, Central, and Late Middle Ages, and Renaissance and Reformation. Also includes Honors content.

Prerequisite(s): Must qualify for Honors program.

Information: Faculty or Advisor approval is required before enrolling in this course. Honors Content: Intensive research using the highest standards and best practices for the discipline; a significant number/variety of readings of both primary and secondary sources; a publishable quality peer reviewed paper or project in a format appropriate for the discipline; and presentation of research, in class or to a wider audience.

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 102 Introduction to Western Civilization II**3 cr. hrs. 3 periods (3 lec.)**

History of the origins and development of the modern Western world. Includes Wars of Religion, the Enlightenment, the Eighteenth century, the Nineteenth century, and the Twentieth century.

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 102HC Introduction to Western Civilization II: Honors**3 cr. hrs. 3 periods (3 lec.)**

History of the origins and development of the modern Western world. Includes Wars of Religion, the Enlightenment, the Eighteenth century, the Nineteenth century, and the Twentieth century. Also includes additional Honors content.

Information: Must qualify for the Honors program. Instructor or advisor/counselor approval may be required registering for this course. Honors Content may include: Intensive research using the highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 105 Introduction to Chicano Studies**3 cr. hrs. 3 periods (3 lec.)**

Chicano(a) life in historical context since 1848. Includes defining Chicano(a) ideologies and realities from an interdisciplinary perspective. Also includes Chicano(a) history and culture within the world systems of Native Americans, New Spain, Mexico and the United States.

Information: Same as MAS 105.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

HIS 113 Chinese Civilization**3 cr. hrs. 3 periods (3 lec.)**

Introductory survey of the civilization of China from its origins to the present. Formative Period (prehistory - 221 B.C.), unification and expansion (221 B.C. - A.D. 221), period of disunity (222-588), flowering of Chinese culture (589-1279), impact of the Mongols on Chinese civilization (1280-1368), Ming Dynasty peace and prosperity (1368-1644), Qing Dynasty - The Manchu Conquest (1644-1911), Republican China (1912-1949), and People's Republic of China (1949-).

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 114 Japanese Civilization**3 cr. hrs. 3 periods (3 lec.)**

Introductory survey of the civilization of Japan from its origins to the present. Includes the Formative Period (prehistory-A.D. 250); influence of Chinese civilization on Japan (300-794); Heian Period - emergence of uniquely Japanese cultural forms (794-1185); Kamakura Shogunate - establishment of military government (1185-1336); Ashikaga Shogunate - civil war and the reunification of Japan (1336-1573); Tokugawa Period (1600-1867); Meiji Period (1868-1912); Taisho Period (1912-1925); Showa Period (1926-1989); and Heisei Period (1990-present).

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 122 Tohono O'odham History and Culture**3 cr. hrs. 3 periods (3 lec.)**

Survey of Tohono O'odham culture, historical development, and modern issues. Includes development of culture and world view, sources of Tohono O'odham history, role in economic and social development of Northwestern Mexico and Southwestern United States, and contemporary Tohono O'odham issues.

Information: Same as AIS 122.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 124 History and Culture of the Yaqui People**3 cr. hrs. 3 periods (3 lec.)**

Survey of the cultural heritage of the Yaqui people and the history of their struggles to protect Yaqui land and customs. Includes Yaqui origins, pre-Columbian Yaqui society, oral traditions and world view, early Spanish contacts, Catholic influences, economic development, rebellions, resistance and leadership, and policies regarding Native Americans. Also includes the deportation and enslavement of the Yaqui from the 17th to the 20th centuries by the Spanish and American governments and the deportation of the Yaqui by the United States in the 1880's. Also examines acts of genocide and subjugation against the Yaqui in revolutionary Mexico, 20th century relocation and adaptation strategies of the Yaqui in the United States and the Yaqui culture of the 21st century.

Information: Same as AIS 124.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 127 History and Culture of the Mexican-American in the Southwest**3 cr. hrs. 3 periods (3 lec.)**

Historical survey of Mexicano(a)/Chicano(a) people from their indigenous origins in Meso-America and the Gran Chichimeca to the present in the United States. Includes historical writings, movements north under Spain and Mexico, repression and resistance. Also covers the political, economic, religious and social movements of the 19th, 20th and early 21st centuries.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Same as ANT 127 and MAS 127.

Gen Ed: Meets AGEC - SBS and I, C, G; Meets CTE - SBS and C, G.

HIS 141 History of the United States I**3 cr. hrs. 3 periods (3 lec.)**

Survey of the major developments in American history from the Columbian voyages to the Era of Reconstruction. Includes Colonial America, the Formative Years - 1776-1815, the Early National Period - 1815-1850, and the coming of the Civil War and its aftermath. Also includes the social, intellectual, and political aspects of early American life.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 141HC History of the United States I: Honors**3 cr. hrs. 3 periods (3 lec.)**

Survey of the major developments in American history from the Columbian voyages to the Era of Reconstruction. Includes Colonial America, the Formative Years - 1776-1815, the Early National Period - 1815-1850, and the coming of the Civil War and its aftermath. Includes the social, intellectual, and political aspects of early American life. Also includes Honors content.

Prerequisite(s): Must qualify for Honors program.

Information: Faculty or Advisor approval is required before enrolling in this course. Honors Content: Intensive research using the highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources; a publishable quality peer reviewed paper or project in a format appropriate for the discipline: presentation of research, in class or to a wider audience.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 142 History of the United States II**3 cr. hrs. 3 periods (3 lec.)**

Survey of the major developments in American history from era of Reconstruction to the present. Includes the era of Reconstruction, the emergence of modern America, the Early 20th Century, and America as a world power. Also includes the social, intellectual, and political aspects of contemporary American life.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 147 History of Arizona**3 cr. hrs. 3 periods (3 lec.)**

Survey of the major developments in the history of Arizona. Includes the Pre-Columbian period through the Spanish era, the Mexican Republic, the years as a U.S. territory, and the time since statehood to the present. Also includes the contributions of the various peoples who have formed the unique cultural and ethnic fabric of this area.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

HIS 148 History of Indians of North America**3 cr. hrs. 3 periods (3 lec.)**

History of the cultural development of Native Americans of North America and the interrelations of cultures. Includes Native American origins, early economic and social development, Europeans, eras in Native American history, modern leadership, and research studies.

Information: Same as AIS/ANT 148.

Gen Ed: Meets AGEC - HUM or SBS and C, G; Meets CTE - A&H or SBS and C, G.

HIS 160 Latin America Before Independence**3 cr. hrs. 3 periods (3 lec.)**

Survey of the history and people of Latin America from indigenous origins to Independence. Includes theory and geography, indigenous Latin America, European backgrounds, colonial economy and society, and resistance and movements for independence in Spanish America.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Recommendation: Placement on Pima Community College assessment exam into REA 112. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - HUM or SBS and I, C, G; Meets CTE - A&H or SBS and C, G.

HIS 161 Modern Latin America**3 cr. hrs. 3 periods (3 lec.)**

Survey of the history and people of Latin America from Independence to the present. Includes Post-Colonial consolidation, United States-Latin America relations, guerilla movements and reactions and Latin America today.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Recommendation: Placement on Pima Community College assessment exam into REA 112. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - HUM or SBS and I, C, G; Meets CTE - A&H or SBS and C, G.

HIS 240 Medieval History**3 cr. hrs. 3 periods (3 lec.)**

A survey of the medieval period of Western Civilization from A.D. 410-1453. Includes an examination of the major political, military, social, economic, religious, artistic, and intellectual events of the Middle Ages.

HIS 254 History of Women in the United States: The 20th Century**3 cr. hrs. 3 periods (3 lec.)**

Survey of American women's history from 1890 to the present. Includes early 20th century gender, race/ethnicity, class formation, women and war, civil rights, feminist and other social movements, and feminism's change to the present.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

HIS 274 The Holocaust**3 cr. hrs. 3 periods (3 lec.)**

Examines the causes, events and legacies of the Nazi assault on humanity. Includes the history of hatred against the Jews and other ethnic, religious, and political groups in Europe, historical antecedents and preconditions of the Holocaust, the rise of the Third Reich and the creation of a racial state, the "Final Solution" and the aftermath.

Gen Ed: Meets AGEC - HUM or SBS and G; Meets CTE - A&H or SBS and G.

HIS 280 History of the World Wars**3 cr. hrs. 3 periods (3 lec.)**

Survey of the two world wars of the twentieth century. Includes prelude to war, outbreak of the Great War, war of two fronts, inter-war years, World War II, and post war world. Also includes changes created in society, government, and international relations as a result of the two wars.

HIS 281 Cold War: Soviet Confrontations and Vietnam**3 cr. hrs. 3 periods (3 lec.)**

Causes and effects of US-Soviet confrontations from WW II to 1994. Includes origins of the Cold War from WW II, initial Soviet probes, challenges in the Far East, probes and rhetoric, Soviet globalism, Vietnam, period of detente, end of detente, new challenge to Soviet Expansionism, and new vision and new world order.

Information: This is a continuation course to HIS 280 History of the World Wars; however, HIS 280 is not a prerequisite. This course will require a college level reading ability.

HIS 296 Independent Study in History**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Independent study in history. Includes topic identification, research plan, data gathering, and presentation of findings.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Honors Program

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HON 101 Honors Colloquium**3 cr. hrs. 3 periods (3 lec.)**

An interdisciplinary course introducing honors students to scholarly research, writing, and conversation. Includes defining and debating contemporary issues in the arts, humanities, sciences, social sciences, business, technology, and/or math. Also includes opportunities for students to develop their critical thinking and creativity; to enhance their practices of research, critical reflection, argumentation, and collaboration; to identify and clarify "real world" issues; to improve their problem-solving capabilities using appropriate group interaction; and to explore their understandings of cultural diversity in local and global contexts.

Information: Students must be eligible for Honors courses based on placement tests, and have a 3.5 GPA or higher, and/or be a Pima Scholar before enrolling in this course.

HON 210 College Honors Advisory Council**1 cr. hrs. 1 periods (1 lec.)**

Student representatives to the College Honors Advisory Council (CHAC) attend CHAC meetings and participate in discussions and decision making; participate in Honors Program events and engagement activities, including local campus events; and take on leadership roles in the Honors Program, the Honors Club, PTK, and/or their local campuses.

Prerequisite(s): HON 101 or concurrent enrollment.

Information: May be taken three times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

HON 244 Honors Field Excursions**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Field excursions provide academic development through travel and study. Students study issues and ideas related to the arts, humanities, sciences, social sciences, businesses, technology, and/or math in real world settings. Excursions provide students with direct experience of domestic cultures and subcultures. Excursions may include a range of visits to domestic or foreign cultural and educational sites; to scientific or business locations; local field excursions; or attendance at conferences and meetings.

Recommendation: Consult instructor for prerequisite(s) and/or corequisite(s) specific to planned excursions.

Information: Must qualify for Honors program. Faculty or Advisor approval may be required. Depending on the nature of the excursion, there may be additional prerequisite(s) and/or corequisite(s). May require domestic or foreign travel expenses.

HON 280 Advanced Honors Colloquium**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

In-depth interdisciplinary course enhancing honors students' scholarly research, writing, and conversation. Includes defining, discussing, and debating contemporary issues in the arts, humanities, sciences, social sciences, business, technology, and math. Also includes opportunities for students to develop their creativity; to improve their practices of critical reflection, argumentation, research, and collaboration; to identify and clarify "real world" issues; and to improve problem-solving capabilities using appropriate group interaction. Course content may be organized around special topics, themes,

Information: Must qualify for Honors program. Faculty or Advisor approval may be required before enrolling in this course.

HON 296 Honors Independent Study Project**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Exploration of special interest areas for Honors students. Content to be determined jointly by student and faculty mentor.

Prerequisite(s): HON 101.

Information: May be taken three times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Hotel & Restaurant Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HRM 100 Introduction to the Hospitality Industry

3 cr. hrs. 3 periods (3 lec.)

Overview of the hospitality industry, including the food service business; restaurants and hotels; and the meeting and conference industry. Includes hospitality industry management and leadership; human resources; marketing and promotion; franchising; and ethics in hospitality management. Also includes learning strategies; achievement of academic and career goals, and occupational success.

HRM 101 Front Office Procedures

3 cr. hrs. 3 periods (3 lec.)

Principles and procedures for front office operations in hotels and resorts. Includes classification of hotels, organizational structure, front office operations planning and evaluation, and human resources management. Also includes reservations, registration, front office accounting, check out and settlement, night audit, and revenue management.

Prerequisite(s): HRM 100.

HRM 104 Hotel Food and Beverage Management

3 cr. hrs. 3 periods (3 lec.)

Hotel food and beverage operations and management. Includes management structure and functions, personnel management, cost control/quality assurance, tools and equipment, facilities, and purchasing and storage. Also includes volume food management; beverage management and service; food products and preparation techniques; menus and recipes; sanitation; and liability issues.

Prerequisite(s): HRM 100.

HRM 110 Food Service Systems Management

3 cr. hrs. 3 periods (3 lec.)

Introduction the various components of systematic food service management. Includes investigation of management principles, various management control methods, and critical operational functions.

Prerequisite(s): HRM 100.

HRM 111 Commercial Food

3 cr. hrs. 5 periods (2 lec., 3 lab)

Introduction to all facets of hot food preparation in a commercial kitchen. Includes the application of proper cooking skills and techniques. Also includes the use and/or preparation of a variety of food items, such as sauces, thickening agents, soups, vegetables, starches, meats, and pastries.

Prerequisite(s): HRM 110

Information: This course requires 10 hours of commercial kitchen demonstration.

HRM 120 Meetings and Convention Management

3 cr. hrs. 3 periods (3 lec.)

Basic principles for planning and operating meetings, conventions, and trade shows. Includes types of events and their economic impact, meetings as a social phenomenon, and the role of the meeting planner. Also includes practical tools for preliminary planning and needs analysis, program design and budgeting, site selection, and on-site management.

Prerequisite(s): HRM 100.

HRM 140 Introduction to Bar and Beverage Management

3 cr. hrs. 3 periods (3 lec.)

Introduction to the fundamental areas of beverage operations. Includes planning of the bar, bar staffing and training, legal regulations, standardized recipes, drink costing and pricing, and beverage production methods and mixology. Also includes product identification; purchasing, receiving, storing and issuing beverages; service of spirits, wine and beer products; marketing and menu development; and cost controls of a beverage operation.

Prerequisite(s): HRM 100.

Recommendation: Students should be at least 21 years of age.

HRM 150 Hospitality Property Management**3 cr. hrs. 3 periods (3 lec.)**

An examination of planning, implementing, and monitoring the hospitality operation environment with the aim of enhancing the guest experience by fostering a proactive approach to compliance, conformance to standards and competitiveness. Includes design and layout of guestrooms, lobbies, food outlets, and recreation outlets as it pertains to maintenance and housekeeping; product and service analysis; inventory control; preventative maintenance; renovations; liability; protecting guests and their property; asset protections; grounds and landscaping; ecology; and transportation.

Prerequisite(s): HRM 100.

HRM 199WK Co-op Work: Hotel and Restaurant Management**1-3 cr. hrs. 5-15 periods (5-15 lab)**

A supervised cooperative work program for students in hotel and restaurant management. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.

Prerequisite(s): HRM 100.

Corequisite(s): HRM 199

Information: May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

HRM 210 Managing Customer Service for the Hospitality Industry**3 cr. hrs. 3 periods (3 lec.)**

Introduction to managing customer service expectations and experiences, with strategies and tactics for managing the customer service experience in all hospitality enterprises. Emphasis on customer satisfaction, customer retention, company profitability, and differing customer service approaches analyzed and evaluated. Topics include: exceptional customer service, communication with the internal customer, handling guest complaints, and managing customer relations. Also includes: how to create a positive customer service climate that harnesses the natural talents of service professionals; guidance on the hiring, training, supporting, retention, and empowerment of service professionals.

Prerequisite(s): HRM 100.

HRM 211 Introduction to Hospitality Sales and Marketing**3 cr. hrs. 3 periods (3 lec.)**

Basic principles and practical skills for developing marketing strategies and the implementation of marketing plans for hospitality enterprises. Includes the vision of marketing as a management philosophy to guide the design and delivery of guest services and the examination of the dynamic relationship between hospitality marketing and daily operations. Also includes an emphasis on sales as an aspect of meeting the needs of the customer, personal selling of the right product in the right place at the right time as an integral part of hospitality operations.

Prerequisite(s): HRM 100.

HRM 235 Hospitality Law**3 cr. hrs. 3 periods (3 lec.)**

An introduction to operations of the legal system and the practical application of law to the hospitality industry. Includes a case study approach to understanding restaurant, hotel, and travel laws and regulations that influence business and management decisions in the hospitality industry.

Prerequisite(s): HRM 100.

HRM 245 Hospitality Human Resource Management**3 cr. hrs. 3 periods (3 lec.)**

Examination of personnel issues in hospitality management. Includes recruitment, selection, orientation, training, wages and benefits, legal issues, and employee evaluation.

Prerequisite(s): HRM 100.

HRM 270 Hospitality Information Technology**3 cr. hrs. 3 periods (3 lec.)**

The impact of computers on the hospitality industry. Includes the basic functions found in property and restaurant management systems and extensive examination of industry-specific applications.

Prerequisite(s): HRM 100.

HRM 289 Hospitality Management Capstone**1 cr. hrs. 1 periods (1 lec.)**

Capstone experience that addresses organizational theory, strategic planning, and simulated problem solving in hospitality management. Includes use of students' awareness of various environmental influences (cultural, political, and social) to solve hospitality business problems. Also includes application of critical thinking skills to preparation of portfolios, case presentations, written case-analysis assignments, interviewing, and resume-writing.

Prerequisite(s): HRM 100, 101, 110, 111, 150 and WRT 102.

Human Resources Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HRS 101 Introduction to Human Resources Management**3 cr. hrs. 3 periods (3 lec.)**

Practical applications for success in personnel management. Includes human resources management in perspective, meeting requirements, the challenge, function/environment, recruitment, compensation, incentive plans, training and development, and labor relations.

HRS 102 Human Resource Law**3 cr. hrs. 3 periods (3 lec.)**

Legal issues associated with human resources management. Includes hiring, personnel practices, wages and hours, taxes employee benefits, family and medical leave, health and safety, illegal discrimination, workers with disabilities, and termination. May also include issues associated with independent contractors, unions, and lawyers and legal research.

HRS 103 Benefits and Compensation**3 cr. hrs. 3 periods (3 lec.)**

Study of benefits and compensation management. Includes strategic compensation planning, components of the wage mix, job evaluation systems, the compensation structure, governmental regulation of compensation, significant compensation issues, employee benefits programs, employee benefits required by law, discretionary major employee benefits, employee services, reasons and requirements for incentive plans, setting performance measures, administering incentive plans, incentive for non-management employees, incentive for management employees, incentives for executive employees, and gain-sharing incentive plans.

HRS 104 Job Requirements, Recruitment, and Personnel Selection**3 cr. hrs. 3 periods (3 lec.)**

Concepts, techniques, and regulation that apply to job requirements, recruitment, and personnel selection. Includes relationships of job requirements and HRS functions, job analysis, job design, matching people and jobs, sources of information about job candidates, employment tests, the employment interview, and reaching a selection decision.

HRS 105 Training and Development**3 cr. hrs. 3 periods (3 lec.)**

Introduction to training, career development, and appraising and improving performance. Includes the scope of training; conducting, implementing, and evaluating training programs as well as special topics in training and development; elements of career development programs and management succession, career development for a diverse workforce, and personal career development are also explored. Also includes performance appraisal programs, developing an effective appraisal program, performance appraisal methods, and appraisal interview.

HRS 106 Labor Relations**3 cr. hrs. 3 periods (3 lec.)**

Exploration of issues in the area of labor relations. Includes employee rights, disciplinary policies and procedures, appealing disciplinary actions, organizational ethics in employee relations, government regulation of labor relations, the labor relations process, structures, functions, and leadership of labor unions, labor relations in the public sector, contemporary challenges to labor organizations, the bargaining process, trends in collective bargaining, the labor agreement, and administration of the labor agreement.

Humanities

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HUM 131 Mythology**3 cr. hrs. 3 periods (3 lec.)**

Myths, legends, and folktales of the Greeks and Romans. Includes basic concepts of myths, myths of the Greeks and Romans, major Greek divinities and their Roman counterparts, stories about the major divinities, artistic representation of myths, effects of ancient myths on western literary movement, similarities and differences between major mythic systems, and anthropological and psychological approaches to mythic systems. Also includes a humanistic approach to the study of Greek and Roman sacred narratives, stories derived from oral traditions, and cultural events, which invite symbolic analysis.

HUM 196 Independent Studies in Humanities**3 cr. hrs. 3 periods (3 lec.)**

Reading and research to be determined between the student and the instructor.

HUM 251 Western Humanities I**3 cr. hrs. 3 periods (3 lec.)**

Introduction to major cultures from rise of city-states through the early Roman Christian era. Includes general history of ideas, art, architecture, religion, philosophy, drama, music, and literature from ancient Near Eastern civilizations, and Greek, Roman, and Early Roman Christian civilizations. Also includes readings such as the Epic of Gilgamesh, Homer, Sophocles, Aristophanes, Plato, Aristotle, Virgil's Aeneid, Hebrew and the Christian Scriptures, and St. Augustine.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, G; Meets CTE - A&H or SBS and G.

HUM 252 Western Humanities II**3 cr. hrs. 3 periods (3 lec.)**

Introduction to major western cultures from the early Medieval through AD 1600. Includes general history of ideas, art, architecture, religion, philosophy, drama, music, and literature from early and late Medieval periods, Renaissance-Reformation, and Counter-Reformation. Also includes readings such as heroic and religious works of the Middle Ages, Dante, Chaucer, Machiavelli, Shakespeare, and Cervantes.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, G; Meets CTE - A&H or SBS and G.

HUM 253 Western Humanities III**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the culture of the modern western world from AD 1600 to the present. Includes general history of ideas, art, architecture, religion, philosophy, drama, music and literature from Enlightenment, Baroque, Romantic, Pre-Modern, and Contemporary periods. Also includes readings such as Voltaire, Rousseau, Goethe, Romantic, pre-modern and contemporary literature, poetry, and drama.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, C, G; Meets CTE - A&H or SBS and C, G.

HUM 260 Intercultural Perspectives**3 cr. hrs. 3 periods (3 lec.)**

Literary and artistic works of American Indians and Asian, Black, and Hispanic Americans, both men and women. Includes traditional and modern works and contributions to American civilization.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM or SBS and I, C; Meets CTE - A&H or SBS and C.

Industrial & Commercial Tech

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ICT 100 Energy Industry Fundamentals**3 cr. hrs. 3 periods (3 lec.)**

Introduction to various types of energy and their conversion to useable energy such as electrical power. Includes how generated electrical power is transmitted and distributed to the point of use.

ICT 101 Introduction to the Natural Gas Industry**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the natural gas industry. Includes the history of the gas industry, safety issues, and field operations.

ICT 102 Introduction to Natural Gas Operations**3 cr. hrs. 3 periods (3 lec.)**

Introduction to natural gas operations and industry. Includes natural gas history, natural gas facts, natural gas networks, general security awareness, safety, basic fire training, abnormal and unusual operating conditions. Also includes emergency response, field operations, operations of MSA valves, visual inspection for atmospheric corrosion, leak test at operating pressure, meter locations, energy diversion, turn offs, and above ground coatings.

ICT 103 Natural Gas Pipe Joiner**3 cr. hrs. 3 periods (3 lec.)**

Principles and practices of plastic pipe joining in the natural gas industry. Includes pipe joining techniques such as solvent cements, heat fusions, mechanical saddle fittings, and compression couplings. This course prepares students for Pipe Joiner Qualification in the natural gas industry.

Prerequisite(s): ICT 101 or 102.

Information: Prerequisite(s) may be waived with appropriate work experience. See an ICT instructor or an advisor for more prerequisite information.

Industrial Maintenance

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

IMO 121 NCCER Industrial Maintenance Electrical & Instrumentation L1**9.5 cr. hrs. 10.4 periods (6.6 lec., 3.8 lab)**

National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes orientation to the trade, tools of the trade, fasteners and anchors, oxyfuel cutting, gaskets and packing, craft-related mathematics, construction drawings, pumps and drivers, valves, test equipment introduction, material handling and hand rigging, mobile and support equipment, and lubrication.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121A NCCER Industrial Maintenance E&I L1 Trade Orientation**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Trade orientation to the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes work performed by industrial maintenance craftworkers, career opportunities, apprenticeship program objectives, craftworker responsibilities and desirable characteristics, and craftworker safety.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121B NCCER Industrial Maintenance E&I L1 Tools Orientation**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Orientation to tools used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes pipe vise, pipe threading machine, cut-off machine, portable power drivers, and the inspection and basic maintenance of tools.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121C NCCER Industrial Maintenance E&I L1 Fasteners/Anchors**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Fasteners and anchors used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes threaded fasteners, screws, anchors, and toggle bolts.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121D NCCER Industrial Maintenance E&I L1 Oxyfuel Cuttings**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Oxyfuel cutting in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes equipment set up, using the oxyfuel torch, shutting down and disassembling equipment, performing basic oxyfuel cuts and track burner.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121E NCCER Industrial Maintenance E&I L1 Gaskets and Packing**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Gaskets and packing used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes gasket layout and installation, cut and install packing, and O-ring installation.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121F NCCER Industrial Maintenance E&I L1 Craft Math**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Craft-related mathematics used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes special measuring devices, tables of weights and measures, basic formulas; problems involving area, volume, circumference and right triangles.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121G NCCER Industrial Maintenance E&I L1 Construction Drawings**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Construction drawings used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes special parts of construction drawings and types of drawings.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121H NCCER Industrial Maintenance E&I L1 Pumps and Drivers**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Pumps and drivers used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes pumps and drivers common to industrial maintenance operations.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121I NCCER Industrial Maintenance E&I L1 Valves**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Valves used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes valve functions, including start and stop flow, regulate flow, relieve pressure, regulate the direction of flow, and valve locations, positions, storage and handling.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121J NCCER Industrial Maintenance E&I L1 Test Equipment**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Test equipment used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes types of test equipment and automated diagnostic tools.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121K NCCER Industrial Maintenance E&I L1 Material Handling/Rigging**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Material handling and rigging used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes safety procedures, rigging equipment, knots used in rigging, center of gravity of a load, rigging hardware, hand signals and sling tension calculation.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121L NCCER Industrial Maintenance E&I L1 Mobile Support Equipment**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Mobile and support equipment used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes safety precautions, motor-driven equipment, preventive maintenance and aerial lift inspection.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 121M NCCER Industrial Maintenance E&I L1 Lubrication**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Lubrication used in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level one. Includes federal guidelines, Material Safety Data Sheet (MSDS), lubricants and greases.

Information: IMO 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, 121K, 121L and 121M comprise IMO 121. These courses are equivalent to the NCCER Level One Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills curriculum.

IMO 122 NCCER Industrial Maintenance Electrical & Instrumentation L2**11.25 cr. hrs. 13.5 periods (9 lec., 4.5 lab)**

National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes industrial safety, the National Electrical Code[®], electrical theory, alternating current, test equipment, flow, pressure, level and temperature, process mathematics, hand bending, tubing, instrument drawings and documents, conductors and cables, and conductor terminations and splices.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122A NCCER Industrial Maintenance E&I Industrial Safety**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Industrial safety basics in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes safe work practices, electrical safety, protective equipment, energy control and environmental hazards.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122B NCCER Industrial Maintenance E&I National Electrical Code[®]**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Introduction to the National Electrical Code[®] (NEC[®]) in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes the purpose and history of the NEC[®], layout of the NEC[®] and other organizations involved with the standards for the manufacture and use of electrical products.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122C NCCER Industrial Maintenance E&I Electrical Theory**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Electrical theory in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes atomic theory, electrical power, schematic representations, resistors and circuits.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122D NCCER Industrial Maintenance E&I Alternating Current**1.25 cr. hrs. 1.5 periods (1 lec., .5 lab)**

Electrical theory in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes sine waves, AC phase relationships, AC circuits, capacitance and transformers.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122E NCCER Industrial Maintenance E&I Test Equipment**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Test equipment in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes electrical meters and instrumentation test equipment.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122F NCCER Industrial Maintenance E&I Flow/Pressure/Level/Temp**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Flow, pressure, level and temperature in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes flow, pressure, level and temperature in common instrument control systems.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122G NCCER Industrial Maintenance E&I Process Mathematics**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Process mathematics in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes common metric measurements, calculators and instrumentation applications used by industrial maintenance electrical and instrumentation technicians.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122H NCCER Industrial Maintenance E&I Hand Bending**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Hand bending of conduits in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes equipment for hand bending conduit, and cutting, reaming and threading conduit.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122I NCCER Industrial Maintenance E&I Tubing**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Tubing in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes the sizes and types of tubing common to commercial plants and other facilities, the storage of tubing and the installation of tubing.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122J NCCER Industrial Maintenance E&I Tube&Pipe System Maintenance**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Tube and pipe systems maintenance in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes cleaning and purging tubing and piping systems, and pressure and leak testing of tube and pipes.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122K NCCER Industrial Maintenance E&I Intro to Drawings & Docs**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Introduction to instrument drawings and documents in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes instrument symbols and identification, instrument index, instrument specifications, notes and details; installation details, drawings, and control loops.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills, NCCER Industrial Maintenance Electrical, and Instrumentation Level One curriculum.

IMO 122L NCCER Industrial Maintenance E&I Conductors and Cables**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Conductors and cables in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes conductors and insulation, and installing conductors in conduit systems.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 122M NCCER Industrial Maintenance E&I Conductor Terminatn/Splices**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Conductor terminations and splices in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level two. Includes stripping and cleaning conductors, wire connections, control and signal cable, low voltage connectors and terminals, and connector installation.

Prerequisite(s): IMO 121.

Information: IMO 122A, 122B, 122C, 122D, 122E, 122F, 122G, 122H, 122I, 122J, 122K, 122L and 122M comprise IMO 122. These courses are equivalent to the NCCER Level Two Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Level One curriculum.

IMO 123 NCCER Industrial Maintenance Electrical & Instrumentation L3**12.25 cr. hrs. 14.7 periods (9.8 lec., 4.9 lab)**

National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes hazardous locations, electronic components, electrical and instrumentation drawings, motor controls, distribution equipment, transformer applications, conductors, temporary grounding, layout and installation of tubing and piping systems, machine bending of conduit, hydraulic controls, pneumatic controls and motor-operated valves.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123A NCCER Industrial Maintenance E&I L3 Hazardous Locations**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes hazardous locations, electronic components, electrical and instrumentation drawings, motor controls, distribution equipment, transformer applications, conductors, temporary grounding, layout and installation of tubing and piping systems, machine bending of conduit, hydraulic controls, pneumatic controls and motor-operated valves.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123B NCCER Industrial Maintenance E&I L3 Electronic Components**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Electronic components in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes semiconductor fundamentals, diodes, rectifiers, light-emitting diodes, photo diodes, opto-isolators, zener diodes, transistors, silicon-controlled rectifiers, diacs and triacs, printed circuit boards, operational amplifiers and basic digital gates.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123C NCCER Industrial Maintenance E&I L3 Electrl Instrmnt Drawing**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Electrical and instrumentation drawings in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes electrical drawings, instrumentation drawings and standardized design methods.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123D NCCER Industrial Maintenance E&I L3 Motor Controls**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Motor Controls in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes electromagnetic relays, magnetic contactors, overload protection, magnetic and manual motor starters, control transformers and pilot devices, drum switches, enclosures, diagrams, NECÆ regulations for installation of motor circuits, and connecting motor controllers for specific applications.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123E NCCER Industrial Maintenance E&I L3 Distribution Equipment**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Distribution Equipment in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes voltage classifications, switchboards, switchgear, testing and maintenance, NECÆ requirements for switchboards, ground faults, HVL switches, bolted pressure switches, transformers, instrument transformers, circuit breakers, panelboards, and NECÆ requirements for services.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123F NCCER Industrial Maintenance E&I L3 Transformer Applications**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Transformer applications in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes transformer types, specialty transformers sizing Buck-and-Boost transformers, and harmonics.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123G NCCER Industrial Maintenance E&I L3 Conductor Selection/Calc**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Conductor selection and calculation in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes conductor applications, conductor properties, and voltage drop.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123H NCCER Industrial Maintenance E&I L3 Temporary Grounding**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Temporary grounding in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes electrical safety analysis, temporary grounding purpose and terms, sources of hazardous energy, temporary grounding preparations, temporary grounding devices, ground cable assemblies, and installing and removing temporary grounding devices.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123. These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123I NCCER Industrial Maintenance E&I L3 Layout Tubing Piping Sys**1.5 cr. hrs. 1.8 periods (1.2 lec., .6 lab)**

Layout and installation of tubing and piping systems in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes tubing and piping system layout, measuring and bending tubing and piping, and support tubing and piping.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123.

These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123J NCCER Industrial Maintenance E&I L3 Machine Bending Conduit**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Machine bending of conduit in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes NECÆ requirements for the machine bending of conduit, types of bends, conduit bending geometry, mechanical benders, mechanical stub-ups, mechanical offsets, electric and hydraulic benders, segment bending techniques, tricks of the trade, PVC conduit installations and bending PVC conduit.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123.

These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123K NCCER Industrial Maintenance E&I L3 Hydraulic Controls**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Hydraulic controls in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes system safety, principles of hydraulics, fluids, system parts, pumps, motors, inspecting and troubleshooting, and applications.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123.

These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123L NCCER Industrial Maintenance E&I L3 Pneumatic Controls**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Pneumatic controls in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes system safety, physical characteristics of gases, effects of atmospheric pressure, compressing gases, pneumatic transmission of energy, compressor operation and types, treatment of compressed air, pneumatic system components, pneumatic symbols, and troubleshooting pneumatic systems.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123.

These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 123M NCCER Industrial Maintenance E&I L3 Motor-Operated Valves**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Motor-operated valves in the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level three. Includes safety, types of motor-operated valves, and set up.

Prerequisite(s): IMO 121 and 122.

Information: IMO 123A, 123B, 123C, 123D, 123E, 123F, 123G, 123H, 123I, 123J, 123K, 123L and 123M comprise IMO 123.

These courses are equivalent to the NCCER Level Three Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One and Two curricula.

IMO 124 NCCER Industrial Maintenance Electrical & Instrumentation L4**11 cr. hrs. 13.2 periods (8.8 lec., 4.4 lab)**

National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes standby and emergency systems, basic process control elements, transducers, and transmitters, instrumentation calibration and configuration, pneumatic control valves, actuators, and positioners, performing loop checks, troubleshooting and commissioning a loop, process control loops and tuning, data networks, programmable logic controllers, and distributed control systems.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124A NCCER Industrial Maintenance E&I L4 Standby/Emergency System**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Standby and emergency systems for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes system components, storage batteries, static uninterruptible power supply, NECÆ requirements for emergency systems and emergency system circuits for lights and power.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124B NCCER Industrial Maintenance E&I L4 Process Control Elements**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Process control elements, transducers and transmitters for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes the fundamentals of process control, detectors, secondary elements, transducers and transmitters.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124C NCCER Industrial Maintenance E&I L4 Instrument Calibration**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Instrument calibration and configuration for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes defining calibration, pneumatic calibration equipment and calibrating procedures, analog calibration equipment and calibrating procedures, smart transmitters and transducers.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124D NCCER Industrial Maintenance E&I L4 Pneumatic Control Valves**2.5 cr. hrs. 3 periods (2 lec., 1 lab)**

Pneumatic control valves, actuators and positioners for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes pneumatic control valves, valves that regulate flow, pneumatic valve actuators, positioners, valve stems and leak prevention, replacing bonnet gaskets, packing valves, storing and handling valves, installing valves, valve markings and nameplate information and troubleshooting actuators and positioners.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124E NCCER Industrial Maintenance E&I L4 Performing Loop Checks**.5 cr. hrs. .6 periods (.4 lec., .2 lab)**

Performing loop checks for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes verifying mechanical installation, loop continuity tests, providing a loop and calibrating a loop.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124F NCCER Industrial Maintenance E&I L4 Troubleshooting Loop**.75 cr. hrs. .9 periods (.6 lec., .3 lab)**

Troubleshooting and commissioning a loop for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes fundamentals of troubleshooting a loop, troubleshooting an oscillating process, proving a loop and commissioning a loop.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124G NCCER Industrial Maintenance E&I L4 Process Control Loops**1.5 cr. hrs. 1.8 periods (1.2 lec., .6 lab)**

Process control loops and tuning for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes process control theory, process control loop basics, control loops, control modes, types of control applications, loop tuning methods, open-loop methods, visual loop tuning and application of process control.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124H NCCER Industrial Maintenance E&I L4 Data Networks**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Data networks for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes the data highway, transfer medium, OSI reference model, network topologies, access control, common network nomenclature, the internet, industrial networks, microcomputer-based LANs, proprietary control networks, bridge, routers and gateways, network cabling, optical fiber cable and cable testing.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124I NCCER Industrial Maintenance E&I L4 Programmable Logic Control**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Programmable logic controllers (PLC) for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes PLC architecture, number systems, PLC hardware, processor modules, software, hardware to program correlation and guidelines for programming and installation.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

IMO 124J NCCER Industrial Maintenance E&I L4 Distributed Cntrl System**1 cr. hrs. 1.2 periods (.8 lec., .4 lab)**

Distributed control systems for the National Center for Construction Education and Research (NCCER) industrial maintenance electrical and instrumentation technician skills, level four. Includes system architecture, controllers and their I/O, software server and engineering station, operator workstation, the network, installation and commissioning, maintenance and troubleshooting, and troubleshooting plant equipment with a distributed control system.

Prerequisite(s): IMO 121, 122, and 123.

Information: IMO 124A, 124B, 124C, 124D, 124E, 124F, 124G, 124H, 124I, and 124J comprise IMO 124. These courses are equivalent to the NCCER Level Four Industrial Maintenance Electrical and Instrumentation Technician curriculum. Students desiring to earn this NCCER credential must first complete the NCCER Core Introductory Craft Skills and NCCER Industrial Maintenance Electrical and Instrumentation Levels One, Two, and Three curricula.

Integrated College Skills

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ICS 079 Integrated College Skills (Reading and Writing)**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Knowledge, skills and techniques required to be successful in college. Includes foundational skills in digital literacy, reading and writing. Also includes study techniques, goal setting, time management, note taking systems, and test taking strategies.

Corequisite(s): STU 100

Information: This course can be taken twice for a maximum of 8 credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

ICS 081 Integrated College Skills (Mathematics)**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Knowledge, skills and techniques required to be successful in college. Includes foundational skills in digital literacy and mathematics. Also includes study techniques, goal setting, time management, note taking systems, and test taking strategies.

Corequisite(s): STU 105

Information: This course can be taken twice for a maximum of 6 credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Interpreter Training

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

ITP 201 Ethics and Social Justice of Interpreting**3 cr. hrs. 3 periods (3 lec.)**

Focuses on identifying personal ethics and beliefs as well as ethics as it relates to the field of interpreting and the Code of Professional Conduct. Also includes discussions of social justice theory and how it relates to ASL and English speaking communities.

Prerequisite(s): ASL 201 with a grade of B or better or better, and WRT 102.

ITP 211 Fundamentals of Interpreting I**3 cr. hrs. 3 periods (3 lec.)**

Foundation skills required for effective translation and interpretation. Includes critical analysis and application for systemically analyzing interactions and texts in order to ascertain where meaning lies. Also includes understanding and developing the cognitive skills for translating and interpreting.

Prerequisite(s): ASL 201 with a grade of B or better or better, and WRT 102.

ITP 212 Fundamentals of Interpreting II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of ITP 211. Focuses on the foundation skills required for effective translation and interpretation. Includes intralingual translation and interpretation text analysis techniques through main point abstraction, summarization, paraphrasing and restructuring a message while retaining its meaning. Discussions will address theoretical aspects of translating and interpreting techniques as well as specific issues related to interpreting skills. Also includes introduction to the interpreting field.

Prerequisite(s): ASL 202 with a grade of B or better, ITP 211 with a C or better, and WRT 102.

ITP 296 Independent Study in Interpreting**1-3 cr. hrs. 3-9 periods (3-9 lab)**

Extensive practice in identified areas of expressive/receptive interpreting/transliterating under supervision of an instructor.

Prerequisite(s): ITP 210, ITP 220 or 270.

Information: Consent of instructor required before enrolling. Course content and performance objectives will be determined by conference between student and instructional faculty.

Japanese

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

JPN 101 Elementary Japanese I**5 cr. hrs. 5 periods (5 lec.)**

Introduction to the Japanese language. Includes an overview of the Japanese language, speaking and listening, writing and reading, grammar, personal transactions, and the cultural context within which Japanese conversation takes place. Also includes writing and reading of Hiragana, Katakana, and 23 Kanji characters.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

JPN 102 Elementary Japanese II**5 cr. hrs. 5 periods (5 lec.)**

Continuation of JPN 101. Includes oral and written forms, grammatical structures, interpersonal transactions, and the cultural component of communication competency.

Prerequisite(s): JPN 101.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

JPN 201 Intermediate Japanese I**5 cr. hrs. 5 periods (5 lec.)**

Continuation of Japanese 102. Includes speaking and listening, grammar, personal transactions, and the cultural context to which Japanese conversations take place. Also includes reading and writing Hiragana, Katakana, and 250 Kanji characters.

Prerequisite(s): JPN 102.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

JPN 202 Intermediate Japanese II**5 cr. hrs. 5 periods (5 lec.)**

Continuation of Japanese 201. Includes speaking and listening, grammar, personal transactions, and using more complex sentence structure in a cultural context within which Japanese conversations take place. Also includes Hiragana, Katakana, and 365 Kanji characters.

Prerequisite(s): JPN 201.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

Journalism

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

JRN 101 Introduction to Reporting and Media Writing**3 cr. hrs. 3 periods (3 lec.)**

Introduction to news reporting. Includes journalism as a career, the journalist and the organization of the newsroom, defining news, news style, elements of a news story, fundamentals of writing news, and news gathering and reporting. Also includes organizing and writing the story, revision of stories, and ethics, libel and media law.

Prerequisite(s): WRT 090 or required score on the writing assessment test.

Gen Ed: Meets CTE - OTHER.

JRN 102 Survey of Media Communications**3 cr. hrs. 3 periods (3 lec.)**

Survey of theory, function and impact of mass media. Includes analysis of book and magazine publishing, newspapers, recorded music, radio, television, film, the Internet, public relations, advertising, and media uses and effects. Also includes media law, ethics, and global communication.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

JRN 185 Newspaper Publishing**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Print and online publication of the college's biweekly student newspaper. Includes elements of news, research mastery, information gathering, qualities of good writing, copy for publication, qualities of good reporting and copy editing, photographs, video and audio, media law, ethics, content and diversity, and using computers.

Prerequisite(s): JRN 101.

Information: This course meets for a combination of lecture and lab. Additional open lab time is available for students. May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

JRN 186 Writing for the Web**3 cr. hrs. 3 periods (3 lec.)**

Introduction to techniques for writing on the World Wide Web. Includes Web technology; adding photos, graphics, video, audio, hypertext and hypermedia; and linear and nonlinear writing forms. Also includes media law and journalistic ethics.

Prerequisite(s): JRN 101.

JRN 235 Writing/Reporting for Broadcast Journalism**3 cr. hrs. 3 periods (3 lec.)**

Introduction to news writing and reporting for television and radio. Includes broadcast news, formats, terminology and readability; shifting from print to broadcast writing; broadcast copy, news gathering and reporting; and reporting assignments and coverage. Also includes writing for radio and television newscasts; short and long packages for radio and television; live shots; breaking news coverage; influence of the Web and new distribution sources; basic video and audio editing; and broadcast law and ethics.

Prerequisite(s): JRN 101.

Recommendation: Completion of JRN 102 before enrolling in this course or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

JRN 240 Editing, Layout, and Design**3 cr. hrs. 3 periods (3 lec.)**

Principles of news editing, layout, and design. Includes hands-on copy editing, fact-checking, proofreading, electronic page layout, typography, design, headline and caption writing, as well as, legal and professional responsibilities. Also includes grammar, language, and Associated Press style.

JRN 280 Photojournalism**3 cr. hrs. 3 periods (3 lec.)**

Practical applications of photographic skills to communicate news stories and document life. Includes basic camera operations, multimedia, digital imaging, and editing software, as well as, ethical and legal considerations. Also includes analysis of visual images, composition, technical concepts, cropping and sizing, layout of photo essays, video editing, and writing captions.

Information: Access to a digital camera is required.

JRN 285 Advanced News Publication**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of JRN 185. Advanced work on print and online publication of the college's biweekly student newspaper. Includes news coverage; qualities of high-level writing, reporting, and copy editing; research and the use of computers, newsroom management, page design, and newspaper legal and ethical considerations.

Prerequisite(s): JRN 185.

Information: This course meets for a combination of lecture and lab. Additional open lab time is available for students. May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

JRN 290 Journalism Internship**1-5 cr. hrs. 5-25 periods (5-25 lab)**

Volunteer internship work experience at an approved site in the journalism field. Includes hands-on work experience, interpersonal communication, learning objectives and progress, and journalism internship assessment.

Prerequisite(s): JRN 101.

Information: Consent of instructor is required before enrolling in this course. May be taken four times for a maximum of twenty credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Korean

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

KOR 101 Elementary Korean I**4 cr. hrs. 4 periods (4 lec.)**

Introduction to Korean. Includes basic oral and written Korean language forms, basic Korean grammatical structures, reading simple text, and Korean cultures and traditions.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

KOR 102 Elementary Korean II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of KOR 101. Includes additional phonetics in the Korean language, additional grammatical structures, reading additional simple text, and additional Korean culture and traditions.

Prerequisite(s): KOR 101.

Gen Ed: Meets AGEC - OTHER; Meets - CTE A&H.

Landscape Technician

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

LTP 119 Plants for Landscape Design**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of plant identification and usage. Includes environmental influences, landscape design basic principles, planting and plant care, plant taxonomy, general and specific applications for plants, and plant selection.

LTP 129 Landscape Design**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of landscape design. Includes determination of project requirements, site analysis, measuring, design principles, preliminary design, landscape plan drawing, and development of a practice project and final project.

LTP 140 Landscape Sustainability and Water Harvesting**3 cr. hrs. 3 periods (3 lec.)**

Principles and strategies for sustainability in landscapes. Includes environmental impacts, techniques in water harvesting, environmental pollution, and the protection and maintenance of natural systems.

Law Enforcement Academy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

LEA 110 Law Enforcement Academy Part I

29 cr. hrs. 33 periods (27 lec., 6 lab)

Development of basic concepts, techniques, and applications utilized in law enforcement. Includes an introduction to ethics and leadership, law and legal matters, multicultural issues, as well as community and police relations. Also includes academic and proficiency skill standards required of law enforcement personnel as defined by the Arizona Peace Officer Standards and Training Board (AZ POST).

Information: Admission to the Law Enforcement Program is restricted and requires completion of program specific application. Please contact the Public Safety and Emergency Services Institute for enrollment information and assistance.

LEA 210 Law Enforcement Academy Part II

16 cr. hrs. 19 periods (14.5 lec., 4.5 lab)

Continuation of LEA 110. Includes increased proficiency of concepts, techniques, and applications utilized in law enforcement, academic and proficiency skills, effective police testimony techniques, review of the United States Constitution, Arizona Revised Statutes (ARS) Title 13, and common civil and criminal liability facing law enforcement agencies and officers. Also includes academic and proficiency skill standards required of law enforcement personnel as defined by the Arizona Peace Officer Standards and Training Board (AZ POST).

Prerequisite(s): LEA 110.

Information: Course contains capstone curriculum for degree.

Library & Information Sciences

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

LIS 120 Beyond Google: Information Literacy and Research Methods

3 cr. hrs. 3 periods (3 lec.)

Development of skills needed to find, evaluate, use and communicate information using a wide variety of resources such as print resources, Library databases, internet resources and other sites to understand how they all fit together when doing academic research. Includes Microsoft Office Word, PowerPoint, and Google Docs; becoming more proficient using these tools for academic coursework. Also includes exercises designed to help students become more efficient in research and class assignments to develop lifelong learning skills.

LIS 150 Social Media and Ourselves

3 cr. hrs. 3 periods (3 lec.)

Distinguish how social media sites are influenced and impacted by users, as well as the role of social media in interpersonal relationships. Includes a focus on social media sites and the various implications and functions of social media in contemporary times. Also includes the study of new media taking place across disciplinary divides and from multiple theoretical perspectives.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

Literature

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

LIT 224 Southwestern Literature

3 cr. hrs. 3 periods (3 lec.)

Reading of Mexican-American/Chicano, American Indian, and Anglo writers of the Southwest. Includes short stories, novels, poetry, and creative non-fiction. Also includes relevant comparisons of social, political, and environmental themes in different cultures.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Faculty approval is required to waive prerequisites.

Gen Ed: Meets AGEC - HUM and I, C; Meets CTE - A&H or SBS and C.

LIT 225 Science Fiction Literature**3 cr. hrs. 3 periods (3 lec.)**

Survey of science fiction work from the nineteenth through the twenty-first centuries in a variety of forms and media. Includes the development and components of the genre, its subgenres, and critical analysis of science fiction literary works. Also includes the role of technology and social issues in science fiction.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

LIT 231 Introduction to Shakespeare**3 cr. hrs. 3 periods (3 lec.)**

Investigation of a number of Shakespeare's major works. Includes sonnets, comedies, histories, and tragedies. Also includes history, social and cultural conditions, literary background, staging, and writing.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

LIT 261 Modern Literature**3 cr. hrs. 3 periods (3 lec.)**

Critical analysis of literature of the modern period and from a variety of nations and cultures. Includes analyzing literary texts for meaning and form, understanding the contexts of literature, and writing about literature. Also includes selections from various literary genres, which may include fiction, drama, and poetry, as well as other literary forms.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, C, G; Meets CTE - A&H or SBS and C, G.

LIT 261HC Modern Literature: Honors**3 cr. hrs. 3 periods (3 lec.)**

Critical analysis of literature of the modern period and from a variety of nations and cultures. Includes analyzing literary texts for meaning and form, understanding the contexts of literature, and writing about literature. Also includes selections from various literary genres, which may include fiction, drama, and poetry, as well as other literary forms. Also includes additional Honors content.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - HUM and I, C, G; Meets CTE - A&H or SBS and C, G.

LIT 262 American Poets**3 cr. hrs. 3 periods (3 lec.)**

Study of the voices and visions of American poets. Includes American poetic visions, distinct styles and voices of poets, and writing assignments.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

LIT 265 Major American Writers**3 cr. hrs. 3 periods (3 lec.)**

Survey of selected works by major American authors from the colonial period to the present. Includes extensive writing and reading and emphasizes relating works to their social and historical contexts. Also includes analysis of literary texts of various genres, such as poetry, drama and fiction, for meaning and form.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

LIT 280 Introduction to Literature**3 cr. hrs. 3 periods (3 lec.)**

Critical analysis of literature from a variety of nations and cultures. Includes analyzing literary texts for meaning and form, understanding the contexts of literature, and writing about literature. Also includes selections from various literary genres, which may include fiction, drama, and poetry, as well as other literary forms.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I, C, G; Meets CTE - A&H and C, G.

LIT 289 Literature and Film**3 cr. hrs. 3 periods (3 lec.)**

Criticism of film's dramatic forms, elements and genres. Includes development of film as an art form, comparative approaches to literature and film, performed drama, critical analysis and film production personnel.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

LIT 289HC Literature and Film: Honors**3 cr. hrs. 3 periods (3 lec.)**

Criticism of film's dramatic forms, elements and genres. Includes development of film as an art form, comparative approaches to literature and film, performed drama, critical analysis and film production personnel. Also includes additional Honors content.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - HUM and I; Meets - CTE A&H.

Logistics & Supply Chain Mgmt

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

LGM 101 Principles of Logistics and Supply Chain Management**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the field of logistics and supply chain management. Includes development of logistics systems, careers in logistics, distribution planning, supply chain security, and customer service. Also includes roles and functions of: purchasing, inventory control, physical distribution, warehousing, transportation methods, packaging, and customs.

LGM 102 Inventory Control**3 cr. hrs. 3 periods (3 lec.)**

A study of inventory control concepts and techniques. Includes, cost concepts, determining size and nature of inventory, forecasting, and inventory planning and control. Also includes ordering methods, controlling pilferage, and matching customer demand with supply.

Prerequisite(s): GTM 105 or required score on the Mathematics assessment test.

LGM 103 Contracts and Freight Claims**3 cr. hrs. 3 periods (3 lec.)**

A study of the considerations involved in the drafting and negotiation of freight and logistics contracts, and of loss avoidance and mitigation in transit. Includes legal and regulatory requirements applicable to contracts for product transportation, and logistics functions and considerations for drafting and negotiating contracts with freight carriers, warehousemen and other logistics service providers. Also includes customer satisfaction, claim preparation, filing procedures, and claim dispute resolution.

LGM 104 Computerized Logistics**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Analysis of the use of computers in the logistics industry and an introduction to available logistics software. Includes the need for computers, the history and future of computers in the logistics industry, and the impact of computers on customer service. Also includes logistics software availability, selection and implementation, and security measures.

LGM 105 Warehouse Management**3 cr. hrs. 3 periods (3 lec.)**

Survey of warehouse function, process, organization and operations. Includes analysis of warehouse location, operation, and management. Also includes controls and procedures, financial analysis, security, cargo/materials handling, and productivity.

LGM 106 Transportation and Traffic Management**3 cr. hrs. 3 periods (3 lec.)**

A study of the domestic freight transportation system. Includes demand for freight movement, laws, regulations, pricing, and policies. Also includes traffic management, customer service, security, and international transportation issues.

LGM 107 Introduction to Purchasing**3 cr. hrs. 3 periods (3 lec.)**

Survey of basic purchasing functions. Includes establishing requirements and quantities, developing policies and procedures for purchasing, making purchasing decisions, receiving acceptable goods, arranging packaging and shipping, and managing inventory levels.

LGM 108 International Logistics**3 cr. hrs. 3 periods (3 lec.)**

An introduction to the role of logistics in global business. Includes the economic and service characteristics of international transportation providers, the government's role, documentation and terms of sale used in global business, and the fundamentals of effective export and import management.

LGM 109 Readiness Skills for Logistics Careers**1 cr. hrs. 1 periods (1 lec.)**

Development of career and learning goals. Includes learning and the world of work, careers in Logistics, and skill development in context. Also includes a focus on the common requirements of all jobs, the skills basic to employment success, and the formal and informal learning necessary for career advancement.

LGM 290 Logistics and Supply Chain Internship**3 cr. hrs. 9 periods (9 lab)**

Culmination of logistics program. Includes guidelines and procedures for workplace learning, application of learned concepts on the job. Also includes initiation, management, and completion of capstone project.

Information: Consent of instructor is required before enrolling in this course. Students must complete 125 hours at a program-approved employer worksite.

LGM 296 Independent Study in Logistics and Supply Chain Management**3 cr. hrs. 3 periods (3 lec.)**

Independent study projects or applied special interest projects in logistics and supply chain management under the supervision of a faculty member.

Prerequisite(s): LGM 101 and LGM 105, 106, or 107

Information: Consent of instructor is required before enrolling in this course.

Machine Tool Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MAC 100 Introduction to Machine Tool**3 cr. hrs. 3 periods (3 lec.)**

Principles and procedures for basic machine tool operations. Includes careers in manufacturing, machine tool history, safety, materials, manufacturing process planning, measurement, layout tools and procedures. Also includes principles of metal cutting, bench and hand tools, power saws, drill presses, and abrasive machine.

MAC 110 Manual Machine Shop**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Introduction to basic machine shop practices. Includes safety, lathes, vertical milling machines, and grinding machines.

Prerequisite(s): MAC 100 or concurrent enrollment.

MAC 120 Machine Shop**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Instruction and applied practices of advanced manual machining procedures. Includes a more in-depth application of safety, lathe usage, vertical milling machines, and outside diameter (OD) grinding machines.

Prerequisite(s): MAC 110 or equivalent with department advisor approval.

MAC 125 Inspection Quality Assurance**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Principles and applications of dimensional measurement. Includes line graduated measuring instruments, fixed gages, gage blocks, comparative measurements, optical comparators and projectors. Also includes angle measurement, straightness, flatness, perpendicularity measurement, and coordinated measuring machines.

Prerequisite(s): GTM 105 and MAC 100.

Information: Prerequisite may be waived with industry experience. See a machine tool instructor for prerequisite information.

MAC 130 Machine Setup and Fixture Making**3 cr. hrs. 5 periods (1 lec., 4 lab)**

Applied setup of manual machining techniques and related skill sets to produce various part fixtures. Includes translating blueprints into machine setup and fixture making.

Prerequisite(s): MAC 110.

Information: Prerequisite(s) may be waived with faculty approved industry experience.

MAC 140 Introduction to Electrical Discharge Machining**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Applications for electrical discharge machining (EDM). Includes EDM machines, processes, spark generation, dielectric fluids, manufacturing of electrodes, and surface finishes.

Prerequisite(s): MAC 110.

Information: Prerequisite(s) may be waived by faculty approved industry experiences.

MAC 150 Computer Numerical Control (CNC) Mill Programming I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Setup operations and programming procedures for automated machining systems. Includes Computer Numerical Control (CNC) machining system, positioning and coordinate systems used in CNC programming, part programming, diagnosis and correction of programming errors, and programming procedures with finished part inspection.

Prerequisite(s): GTM 105.

Recommendation: Completion of CAD 117 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MAC 155 Computer Numerical Control (CNC) Mill Programming II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of MAC 150 programming instruction. Includes a review of Computer Numerical Control (CNC), mill programming, diagnosis and correction of programming errors, advanced programming techniques used in production and prototype machining, introduction to lathe programming, and introduction to sub-programming.

Prerequisite(s): MAC 150.

Information: Prerequisite(s) may be waived with industry experience and faculty approval.

MAC 160 Computer Numerical Control (CNC) Lathe Programming**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Operations and procedures for Computer Numerical Control (CNC) Lathe. Includes review of CNC concepts and programming, diagnosis and correction of programming errors, advanced programming for CNC Lathes, and introduction to Computer Aided Manufacturing (CAM) programs.

Prerequisite(s): GTM 105 and MAC 150.

Information: Prerequisites may be waived with industry experience and faculty approval.

MAC 257 Computer-Aided Machining CAM I**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Computer-Aided Machining (CAM) I Programming of Computer Numerical Control (CNC) machines using Computer-Aided Manufacturing (Mastercam) software. Includes a review of CNC and Computer-Aided Drafting (CAD), introduction to a CAM environment, creating geometry, operating manager, and code generation.

Prerequisite(s): MAC 155.

Information: Prerequisite(s) may be waived with industry experience with faculty approval.

MAC 258 Computer Aided Machining (CAM) II**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Continuation of MAC 257. Includes profile surface, 3D surfaces, editing surfaces and preparing geometry for wire part.

Prerequisite(s): MAC 257.

MAC 259 Computer Aided Machining (CAM) III: Solid Modeling**4 cr. hrs. 7 periods (1 lec., 6 lab)**

Continuation of MAC 258. Includes profile surfaces of tool path, solid model features in three-dimension (3-D), and editing solid model surfaces.

Prerequisite(s): MAC 258.

MAC 275 Applied Metallurgy**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Application of metallurgical concepts, procedures, and testing. Includes materials, alloy classification systems, industrial and manufacturing concepts, properties and testing, and industrial and manufacturing processes and applications.

Prerequisite(s): GTM 105.

MAC 296 Machine Tool Independent Projects**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent machine tool projects. Includes producing prints that become skill set completed projects with setup of machines to part completion.

Prerequisite(s): MAC 110.

Information: May be taken sixteen times for a maximum of sixteen credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor must be obtained before enrolling in this course.

Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MGT 110 Human Relations in Business and Industry**3 cr. hrs. 3 periods (3 lec.)**

Examination of human relations as it relates to business and industry. Includes the roles of the employees, supervisors, and management. Also includes management concepts and functions, communication, leadership, managing change and stress, human motivation, creativity, diversity and culture, and decision making.

MGT 122 Supervision**3 cr. hrs. 3 periods (3 lec.)**

Theories and concepts of supervision. Includes the role of the supervisor, management concepts and functions, communication, managing change and stress, human motivation, building relationships, supervision of groups, leadership and management styles, selection, orientation, training, appraisal, and discipline. Also includes complaints, grievances, working with the union, security, safety, and health at work.

Recommendation: It is recommended that students complete MGT 110 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: This course consists of study and application. The student will first review all of the major concepts in supervision. The student will then utilize all of the major concepts presented to examine and evaluate a series of case studies. At the end of the course, a final and cumulative case study will be evaluated.

MGT 200 Small Business Management/Entrepreneurship**3 cr. hrs. 3 periods (3 lec.)**

Analysis of the practical problems of organizing, managing and starting a small business. Includes feasibility analysis, forms of ownership, managing the business, business plan, pricing, managing cash flow, creating sales forecast, income statements, breakeven analysis, source of funds, international operations, building an entrepreneurial team, risk management, and international opportunities.

MGT 230 Dynamics of Leadership**3 cr. hrs. 3 periods (3 lec.)**

Overview of the theoretical and applied foundations of leadership. The theoretical component includes the historical and contemporary theories and models of leadership, effective followership, multiculturalism, and ethics. The applied component includes the importance and use of vision and mission, inclusive leadership practices, responding to change, developing a personal philosophy of leadership, and creating a personal profile of strengths and assets. Communication and facilitation skills will be practiced with the completion of a leadership project.

Information: Same as STU 230.

MGT 270 Computer Applications for Managers**3 cr. hrs. 3 periods (3 lec.)**

Development of management skills in computer applications for business. Includes state of computing technology, electronic commerce and the economy, international issues, work and the virtual workplace, project management, and presentations.

Recommendation: Completion of CIS/CSA 104 Computer Fundamentals or proficiency with Microsoft Office software before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MGT 276 Human Resources**3 cr. hrs. 3 periods (3 lec.)**

Practical aspects of personnel management and support. Includes roles and concepts, acquiring human resources, administering the personnel program, developing employee potential, employee retention, equal employment opportunities, staffing and training, labor relations, and future outlook for personnel management.

Recommendation: Completion of BUS 100 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MGT 280 Business Organization and Management**3 cr. hrs. 3 periods (3 lec.)**

Overview of the functions performed and issues faced by managers in business. Includes managers and management, the managerial environment, planning and decision support systems, project management, managerial control, and leadership. Also includes motivation and performance, control, and creating and sustaining high performance teams.

Prerequisite(s): BUS 100.

Recommendation: Completion of BUS 100 and any other MGT course before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Marketing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MKT 111 Principles of Marketing**3 cr. hrs. 3 periods (3 lec.)**

Introduction to marketing communication, principles, and strategies. Includes global diversity in the marketing environment, product classification, pricing considerations, distribution of products/services, and promotion using traditional and social media strategies.

MKT 113 Salesmanship**3 cr. hrs. 3 periods (3 lec.)**

Basic principles and techniques of selling and their practical application. Includes selling as a profession, preparation for relationship selling, the selling process, and planning and managing a sales territory.

MKT 139 Retailing**3 cr. hrs. 3 periods (3 lec.)**

Business activities of selling goods and services to final customers. Includes overview of the industry of retailing, environmental framework, consumer demographics and behavior, retail outlet characteristics, the retailing mix, retail information and control systems, the changing nature of retailing, and retailing careers.

MKT 140 Fashion Merchandising**3 cr. hrs. 3 periods (3 lec.)**

Overview of enterprises involved in clothing and accessories. Includes design, production, and sourcing of fashion; marketing, distribution, and the fashion consumer; different silhouettes of apparel and textile characteristics, methods of research for retailing, careers in fashion merchandising, and case studies. Also includes a managerial perspective on apparel product quality and profit in a retail setting.

MKT 196 Independent Study in Marketing and Business**.5-3 cr. hrs. 1.5-9 periods (1.5-9 lab)**

Student independently continue their studies in Marketing and Business under the supervision of a faculty member.

Information: Consent of instructor is required before enrolling in this course. May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MKT 200 Advertising**3 cr. hrs. 3 periods (3 lec.)**

Advertising principles and concepts as applied in a business setting. Includes advertising perspectives, developing marketing and advertising strategies, creating advertisements and commercials, and advertising media mix.

MKT 240 Fashion Merchandising Planning and Control**4 cr. hrs. 4 periods (4 lec.)**

Survey of analytical skills for the process of merchandising. Includes evaluation of merchandise in clothing sales, merchandise planning, developing the presentation of apparel lines, and finalizing apparel lines through merchandising and budget review. Also includes the application of Web PDM.

Prerequisite(s): MKT 140.

Mathematics

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MAT 082 Basic Mathematics**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals and applications of arithmetic. Includes operations on whole numbers, fractions, decimal numbers, ratio and proportion, percent, and measurement.

MAT 089A Foundational Studies in Mathematics I**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals and applications of basic math, elementary algebra, and intermediate algebra.

Prerequisite(s): Satisfactory score on the Mathematics placement test.

Information: The course content is offered in 35 modules which are divided between MAT 089A and MAT 089B. They are computer delivered in a structured, individualized learning environment with on-demand instruction assistance. Attendance at regularly scheduled classes is required. The course may be taken two times for a maximum of six credit hours. To earn a passing grade, students must successfully complete a minimum of 9 modules. You must complete a minimum of 18 modules in MAT 089A before enrolling in MAT 089B.

MAT 089B Foundational Studies in Mathematics II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of the fundamentals and applications of basic math, elementary algebra, and intermediate algebra.

Prerequisite(s): MAT 089A.

Information: The course content is offered in 35 modules which are divided between MAT 089A and MAT 089B. They are computer delivered in a structured, individualized learning environment with on-demand instruction assistance. Attendance at regularly scheduled classes is required. The course may be taken two times for a maximum of six credit hours. To earn a passing grade, students must successfully complete a minimum of 9 modules. You must complete a minimum of 18 modules in MAT 089A before enrolling in MAT 089B.

MAT 092 Elementary Algebra**3 cr. hrs. 3 periods (3 lec.)**

Includes translating written statements into algebraic expressions, solving linear equations and inequalities, graphing linear equations, and solving systems of equations in two or three variables. Also includes integer exponents, scientific notation, polynomial operations, and factoring of polynomials.

Prerequisite(s): Within the last three years: ICS 081 with a grade of B or better, or MAT 086 with a grade of C or better, or completion of module 15 in MAT 089A or MAT 089B, or satisfactory score on the Mathematics assessment test.

Corequisite(s): MAT 092LB

MAT 092LB Mathematics Success Support**1 cr. hrs. 2 periods (2 lab)**

Provides content and activities to support the conceptual learning of the topics in MAT092. Includes a foundation for success in future math or quantitative literacy courses.

Corequisite(s): MAT 092

MAT 092S Topics in College Mathematics Co-requisite**2 cr. hrs. 2 periods (2 lec.)**

Preparation for Topics in College Algebra. Includes translating written statements into algebraic expressions, solving linear equations and inequalities and graphing linear equations. Also includes integer exponents, scientific notation, polynomial operations, and factoring of polynomials.

Prerequisite(s): Within the last three years: ICS 081 with a grade of B or better, or completion of module 15 in MAT 089A or MAT 089B, or satisfactory score on the Mathematics assessment test.

Corequisite(s): MAT 142 MAT 142

MAT 095 Pre-College Algebra**5 cr. hrs. 5 periods (5 lec.)**

Basic and intermediate algebra concepts. Includes translating written statements into algebraic expressions, linear equations, linear inequalities, graphing, integer exponents, and polynomials. Also includes factoring, rational and radical expressions and equations, square roots, quadratic equations, functions, exponential and logarithmic expressions.

Prerequisite(s): Within the last three years: ICS 081 with an A, or MAT 086 with a B or better, or completion of module 22 in MAT 089A or MAT 089B, or required score on the Mathematics assessment test.

Information: Access to a scanner required for Math classes taken online.

MAT 097 Intermediate Algebra**3 cr. hrs. 3 periods (3 lec.)**

Definition of function and function notation, compound inequalities in one variable, graphs of linear inequalities in two variables, and absolute value equations and inequalities. Also includes rational and radical functions and equations, quadratic functions and their graphs, exponential functions and their graphs, and logarithms.

Prerequisite(s): Within the last three years: MAT 092 with a grade of C or better, or completion of module 25 in MAT 089A or MAT 089B, or satisfactory score on the Mathematics assessment test.

Information: The online sections for the course require students to have the ability to share (electronically) handwritten work within the course.

MAT 097S College Algebra Co-requisite**2 cr. hrs. 2 periods (2 lec.)**

Preparation for college algebra. Includes the definition of function and function notation, compound inequalities in one variable, graphs of linear inequalities in two variables, and absolute value equations and inequalities. Also includes rational and radical functions and equations, quadratic functions and their graphs, exponential functions and their graphs, and logarithms.

Prerequisite(s): With a grade of B or better in MAT 092 or placement into MAT 097 on the Math placement exam.

Corequisite(s): MAT 151 Concurrent enrollment in MAT 151.

Information: This class is a supplement to MAT 151 for eligible pre-college ready students.

MAT 106 Elementary Data Analysis with Spreadsheets**3 cr. hrs. 3 periods (3 lec.)**

Introduction to statistics. Includes the collection and presentation of data, statistical measures, algebra topics, Excel topics, and data analysis topics.

Gen Ed: Meets CTE - M&S.

MAT 122Z Intermediate Algebra**3 cr. hrs. 3 periods (3 lec.)**

Basic algebraic functions. Includes lines in the plane, systems of linear equations, inequalities, polynomials, rational expressions and equations, radical expressions and equations. Also includes quadratic equations, literal equations, exponents, logarithms, functions, and optional topics.

Information: Upon completion of all modules of MAT 089, students will have met all of the competencies of MAT122 and will receive credit equivalent to MAT 122Z. No more than 3 credit hours can be applied toward graduation for MAT 122, 122Z, and/or 123.

MAT 141 Topics in College Mathematics**4 cr. hrs. 4 periods (4 lec.)**

Survey of mathematical topics and applications. Includes application of probability, statistics, finance, and growth models.

Prerequisite(s): Within the last three years: MAT 092 with a C or better or completion of module 25 in MAT 089A or 089B or required score on the Mathematics assessment exam.

Information: Equivalent to MAT 142.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 142 Topics in College Mathematics**3 cr. hrs. 3 periods (3 lec.)**

Survey of mathematical topics and applications. Includes application of probability, statistics, finance, and growth models.

Prerequisite(s): Within the last three years: MAT 092 with a C or better or completion of module 25 in MAT 089A or 089B or required score on the Mathematics assessment exam.

Information: Equivalent to MAT 141

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 145 Mathematics for Game Design**4 cr. hrs. 4 periods (4 lec.)**

Survey of mathematical topics and applications as applied to game design. Includes 2D and 3D geometry, geometric symmetry, trigonometry, vectors, logic, probability, statistics, and problem solving.

Prerequisite(s): Within the last three years: MAT 095 or 097 or 122 or 122Z or 123 with a C or better, or satisfactory score on the Mathematics assessment exam.

Corequisite(s)

MAT 146 Mathematics for Elementary Teachers I**3 cr. hrs. 3 periods (3 lec.)**

An overview of mathematical concepts, principles and applications specifically for elementary teachers. Includes real number properties and patterns, arithmetic operations and algorithms in subsets of real numbers, alternative numbers systems, set theory, and algebraic reasoning and problem solving. Also includes the technology to teach mathematics.

Prerequisite(s): Within the last three years: MAT 141, 142, 151 or higher with a grade of C or better, or mathematics assessment test into MAT 167 or higher.

Information: It is not recommended that students enroll concurrently in MAT 146 and 147. Access to a scanner required for math classes taken online.

MAT 147 Mathematics for Elementary Teachers II**3 cr. hrs. 3 periods (3 lec.)**

An overview of mathematical concepts, principles and applications specifically for elementary teachers. Includes measurement, basic geometry, probability, and statistics. Also includes the technology to teach mathematics.

Prerequisite(s): Within the last three years: MAT 141, 142, 151 or higher with a grade of C or better, or mathematics assessment test into MAT 167 or higher.

Information: It is not recommended that students enroll concurrently in MAT 146 and 147. Access to a scanner required for math classes taken online.

MAT 151 College Algebra**4 cr. hrs. 4 periods (4 lec.)**

Introduction to college-level algebra. Includes functions, exponential and logarithmic functions, linear 2x2 and higher systems, graphing, and calculator use. A graphing calculator is required.

Prerequisite(s): Within the last three years: MAT 095 or 097 or 122 or 122Z or 123 with a C or better, or or required score on the Mathematics assessment test.

Information: Credit for only one course will be awarded to students completing MAT 151 and MAT 188. See course description or advisor to choose your best option. No more than 7 credits may be applied toward graduation from the following list of courses: MAT 151, 182, 187, 188, and 189. A graphing calculator is required. See your instructor for details. Access to a scanner required for math classes taken online.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 167 Introductory Statistics**3 cr. hrs. 3 periods (3 lec.)**

Introduction to statistics. Includes the nature of statistics, quantitative data, probability, probability distributions and the central limit theorem. Also includes estimates for population parameters, hypothesis testing, correlation with regression, and additional topics with choices from chi square distribution, ANOVA and/or nonparametric methods.

Prerequisite(s): Within the last three years: MAT 151 with a C or better, or required score on the Mathematics assessment test.

Information: Use of a graphing calculator and/or computer programs may be required at the discretion of the instructor. Access to a scanner required for math classes taken online.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 172 Finite Mathematics**3 cr. hrs. 3 periods (3 lec.)**

Sampling of finite mathematics which includes mathematics of finance, linear business functions, systems of equations, matrices, geometric and simplex methods of solving linear programming problems, logic, sets, combinatorics, basic probability, probability distributions, and Markov chains.

Prerequisite(s): Within the last three years: C or better in MAT 151 or satisfactory score on the mathematics assessment exam.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 188 Precalculus I**4 cr. hrs. 4 periods (4 lec.)**

College-level algebra. Includes equations, systems of equations, algebraic and transcendental functions, inequalities, sequences and series, and calculator use.

Prerequisite(s): Within the last three years: MAT 095 or MAT 097 with a grade of C or better, or required score on the Mathematics assessment test.

Recommendation: This course is intended as an intensive preparation for students who plan to continue to Calculus.

Information: Credit for only one course will be awarded to students completing MAT 151 and MAT 188. See course description or advisor to choose your best option. No more than 7 credits may be applied toward graduation from the following list of courses: MAT 151, 182, 187, 188, and 189. A graphing calculator is required for this course and will be used extensively.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 189 Precalculus II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of MAT 188. College-level trigonometry. Includes trigonometric functions, angle measure, graphs, identities, equations, polar coordinates, conic sections, and calculator use. May also include parametric equations, vectors, and complex numbers.

Prerequisite(s): Within the last three years: MAT 188 with a grade of C or better, or required score on the mathematics assessment test.

Recommendation: This course is intended as an intensive preparation for students who plan to continue with Calculus.

Information: No more than 7 credits may be applied toward graduation from the following list of courses: MAT 151, 188, and 189. A graphing calculator is required for this course and will be used extensively.

MAT 197 Precalculus Supplemental Seminar**1 cr. hrs. 1 periods (1 lec.)**

Precalculus inquiry-based problem-solving and applications. Includes mathematical modeling, problem-solving techniques and the Rule of Four: algebraic, contextual, graphical, and numerical representations.

Prerequisite(s): Within the last three years: MAT 188 with a C or better, or required score on the Mathematics assessment test.

Corequisite(s): MAT 189

Information: This course is designed to mirror MATH 196L taught at the University of Arizona.

MAT 212 Topics in Calculus**3 cr. hrs. 3 periods (3 lec.)**

Introductory topics in differential and integral calculus to include limits, continuity, differentiation, and integration of functions with particular emphasis on business applications. Microsoft Excel and/or graphing calculators will be used as tools for further understanding of these concepts.

Prerequisite(s): Within the last three years: C or better in MAT 151 or 188, or satisfactory score on the mathematics assessment exam.

Information: A graphing calculator (technology) is required. See your instructor for details.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 220 Calculus I**5 cr. hrs. 5 periods (5 lec.)**

Introduction to analytical geometry and calculus. Includes limits and continuity, derivatives, applications of the derivative, and integration.

Prerequisite(s): Within the last three years: MAT 188, and 189 with a C or better; or required score on the Mathematics assessment exam.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 220HC Calculus I: Honors**5 cr. hrs. 5 periods (5 lec.)**

Introduction to analytical geometry and calculus. Includes limits and continuity, derivatives, applications of the derivative, and integration. Also includes additional Honors content.

Prerequisite(s): Within the last three years: MAT 188, and 189 with a C or better; or required score on the Mathematics assessment exam.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive theoretical-based and/or application-based projects using highest standards and best practices for the discipline. Also may include team problem solving projects in formats appropriate for the discipline with results presented in class or to a wider audience.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 227 Discrete Mathematics in Computer Science**4 cr. hrs. 4 periods (4 lec.)**

Mathematical concepts applicable to computer science. Includes logic, set theory, counting techniques, proof techniques, relations and functions, binary relations, big-oh notation, mathematical induction, and recursion.

Prerequisite(s): Within the last three years: MAT 220 or higher with a C or better.

Recommendation: Completion of CIS 129 or programming experience is recommended prior to enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 231 Calculus II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of MAT 220. Includes techniques and applications of integration, numerical integration, improper integrals, sequences, infinite series, polar coordinates, parametric equations, and other related topics.

Prerequisite(s): Within the last three years: MAT 220 with a C or better.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 231HC Calculus II: Honors**4 cr. hrs. 4 periods (4 lec.)**

Continuation of MAT 220. Includes techniques and applications of integration, numerical integration, improper integrals, sequences, infinite series, polar coordinates, parametric equations, and other related topics. Also includes additional Honors content.

Prerequisite(s): Within the last three years: MAT 220 with a C or better.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive theoretical-based and/or application-based projects using highest standards and best practices for the discipline. Also may include team problem solving projects in formats appropriate for the discipline with results presented in class or to a wider audience.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 241 Calculus III**4 cr. hrs. 4 periods (4 lec.)**

Continuation of MAT 231. Includes vectors in two and three dimensions, vector-valued functions, differentiation and integration of multivariable functions, and calculus of vector fields.

Prerequisite(s): Within the last three years: MAT 231 with a grade of C or better.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 252 Introduction to Linear Algebra**3 cr. hrs. 3 periods (3 lec.)**

Introduction to vector spaces and linear transformations. Includes systems of linear equations, vector spaces, inner product spaces, matrices, and linear transformations.

Prerequisite(s): Within the last three years: MAT 231 with a C or better.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 262 Differential Equations**3 cr. hrs. 3 periods (3 lec.)**

Introduction to differential equations. Includes first order differential equations, higher order differential equations, systems of linear differential equations, Laplace transforms, and approximating methods. Also includes applications.

Prerequisite(s): Within the last three years: MAT 231 with a C or better.

Gen Ed: Meets AGEC - MATH; Meets CTE - M&S.

MAT 296 Independent Studies in Mathematics**1-4 cr. hrs. 1-4 periods (1-4 lec.)**

Independent studies and projects in mathematics. Content to be determined by conference between student and instructor.

Information: Consent of a sponsoring instructor must be obtained before registering in this class.

Mechatronics

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MCT 105 Electronics Assembly**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to electronic assembly safety practices and procedures, hand tools, and measuring devices. Includes basic and special assembly tools, fastener installation and removal tools, precision measuring tools, fabrication tools; torque measuring instruments, and troubleshooting.

Medical Assistant

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MDA 120 Medical Assistant Profession**2 cr. hrs. 2 periods (2 lec.)**

Overview of the medical assistant profession including the role of patient navigator and effective communication. Includes legal implications for the medical assistant, scope of practice, standard of care, and legal terminology. Also includes an overview of ethics, morals, and the effect of personal ethics on professional behaviors.

MDA 121 Medical Assistant Skills for Success**2 cr. hrs. 2 periods (2 lec.)**

Professional and personal success tools and strategies to assure a seamless transition to a professional medical assistant career. Includes communication techniques, licensure, scope of practice, reporting and balancing personal health, emotional well-being, and financial stability. Also includes insights into completion of an externship followed by approaches to identifying employment opportunities, developing a personal profile, résumé, and follow up correspondence.

MDA 122 Medical Assistant Clinical Care**2 cr. hrs. 4 periods (1 lec., 3 lab)**

A student-centered, interactive learning approach to the role of the medical assistant related to interactions within a medical practice to provide safe patient care. Includes performing and documenting appropriate diagnostic measures, identifying pathology, and initiating treatment prescribed by a licensed provider. Also includes Exposure Control Plan, Blood Borne Pathogens Standard, Personal Protective Equipment (PPE), Environmental Protection and disposal of Chemical and Biological Waste based on Occupational Health and Safety Administration (OSHA) guidelines and Center for Disease Control (CDC) regulations to assure safety in the medical practice.

*Corequisite(s):*MDA 123**MDA 123 Medical Assistant Clinical Procedures****3 cr. hrs. 5 periods (2 lec., 3 lab)**

An integrative approach to learning and developing the clinical procedural skills required to work in an ambulatory care setting. Includes the collection and documentation of vital signs, patient history, patient assessment, and partnering with patients to provide them with resources to achieve and maintain health. Also includes Clinical Laboratory Improvement Amendment (CLIA) waived testing, safety in medication administration, principles of nutrition, and legal and ethical considerations.

*Corequisite(s):*MDA 122**MDA 124 Medical Terminology for Health Care Workers****2 cr. hrs. 2 periods (2 lec.)**

Medical terminology used in health care, including descriptions of special care populations, specialty services, and communication. Encompasses a body systems approach to terms as they relate to structures, functions, diseases, procedures, and diagnostic tests. Also includes medical abbreviations, symbols, spelling, building, and analyzing medical terms.

MDA 125 Orientation to ICD-10-CM and CPT Coding**3 cr. hrs. 3 periods (3 lec.)**

Orientation to the International Classification of Diseases -10th Edition (ICD-10) coding classification system. Includes terminology, principles and components of the ICD-10 system, codes for diseases and conditions, coding from health records, and coding for the highest specificity.

Recommendation: Completion of MDA 121 and 124 before enrolling in this course. Also a minimum of 25 words per minute word processing skills. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MDA 126 Medical Billing and Insurance for Medical Assistants**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the role of the Medical Assistant to the processes and procedures related to health insurance plans in an ambulatory care environment. Includes the principles of bookkeeping, billing, accounting, and banking. Also includes the requirements for completing and submitting claims forms.

Recommendation: Minimum of 25 words per minute word processing skills.

MDA 127 Administrative Procedures for Medical Assistants**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Principles, guidelines, and procedures for professional front office administration performed by the Medical Assistant. Includes the use of electronic technology for appointment scheduling, documenting, filing, and medical records data collection and management. Also includes a broad range of verbal and nonverbal communication techniques to assist Medical Assistants in addressing the needs of a diverse patient population.

MDA 128 Medical Billing and Insurance for Medical Assistants**2 cr. hrs. 2 periods (2 lec.)**

Introduction to the role of the Medical Assistant to the processes and procedures related to health insurance plans in an ambulatory care environment. Includes the principles of bookkeeping, billing, accounting, and banking. Also includes the requirements for completing and submitting claims forms.

Recommendation: Minimum of 25 words per minute word processing skills.

MDA 190A Medical Assistant Front Office Externship**1 cr. hrs. 5 periods (5 lab)**

Practicum in administrative medical assisting. Application of administrative duties, procedures, and knowledge derived from medical assisting courses.

Prerequisite(s): HCA 119, MDA 120, 121, 124, 125, 127 and 128.

Information: Permission of the program director is required to enroll in this course.

MDA 190B Medical Assistant Back Office Externship**1 cr. hrs. 5 periods (5 lab)**

Practicum in clinical medical assisting. Application of clinical skills, procedures, and knowledge derived from medical assisting courses.

Prerequisite(s): HCA 103, 119, MDA 120, 121, 122, 123 and 124.

Information: Permission of the program director is required to enroll in this course.

Medical Laboratory Technician

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MLT 100 Phlebotomy for Medical Laboratory Technology**2 cr. hrs. 2 periods (2 lec.)**

Theory of basic phlebotomy techniques and procedures. Includes instruction for blood collection, patient care, quality assurance standards, medical terminology, anatomy, blood collection procedures, variables, computers and specimen processing, and point of care (POC) testing.

Prerequisite(s): BIO 156IN or 160IN or 201IH or 201IN or 202IN.

Corequisite(s): MLT 100LB

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 100IN Phlebotomy for Medical Laboratory Technology**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Theory and practice of basic phlebotomy techniques and procedures. Includes blood collection for patient care, quality assurance standards, medical terminology, anatomy, blood collection procedures, variables, computers and specimen processing, and point of care (POC) testing.

Prerequisite(s): BIO 156IN or 160IN or 201IH or 201IN or 202IN.

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course. IN is the integrated version of the course with the lecture and lab taught simultaneously.

MLT 100LB Phlebotomy for Medical Laboratory Technology Lab**1 cr. hrs. 3 periods**

Practice of basic phlebotomy techniques and procedures. Includes blood collection for patient care, quality assurance standards, medical terminology, anatomy, blood collection procedures, variables, computers and specimen processing, and point of care (POC) testing.

Prerequisite(s): BIO 156IN or 160IN or 201IH or 201IN or 202IN.

*Corequisite(s):*MLT 100

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 199 Introductory Co-op: Phlebotomy Lab Assisting**1.5 cr. hrs. 1.5 periods (1.5 lec.)**

Principles of job success in a medical lab setting. Includes laboratory workplace skills, communication skills, time and energy management, managing stress, career information, and preparing for employment. Also includes principles, theories, and practices in the career field; and problems in the work situation.

Prerequisite(s): MLT 100IN (or 100 and 100LB).

*Corequisite(s):*MLT 199WK

Information: Consent of instructor is required before enrolling in this course.

MLT 199WK Introductory Co-op Work: Phlebotomy Lab Assisting**1.5 cr. hrs. 4.5 periods (4.5 lab)**

A supervised cooperative work program for students in an occupation related area. Clinical coordinators work with students and their preceptors in a hospital, clinic laboratory, or outpatient collection station. The student develops competency and improved self-confidence when collecting and processing blood, urine or other body fluid samples in the laboratory workplace.

Prerequisite(s): MLT 100IN (or 100 and 100LB).

*Corequisite(s):*MLT 199

Information: Consent of instructor is required before enrolling in this course. Students complete 68 clock hours of supervised placement at approved work site.

MLT 200 Urinalysis/Body Fluids**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the fundamental clinical lab techniques of urine and body fluids. Includes collection, physical and chemical examination, microscopic examination, body fluids, and individual fluids.

Prerequisite(s): With a grade of B or better: BIO 205IN, and MAT 151 or assessment into MAT 189.

Corequisite(s)

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 211 Hematology**5 cr. hrs. 7 periods (4 lec., 3 lab)**

The study of red cells, white cells, and platelets looking at structure, formation, and the diseases associated with these cells. Includes types of blood cells, tests, normal and abnormal blood cells, maturation, disease states, hemoglobins, hemoglobinopathies, hemostasis, coagulation, fibrinolytic system, instrumentation, and quality controls and assurance.

Prerequisite(s): With a grade of B or better: BIO 205IN, and MAT 151 or assessment in MAT 189.

Corequisite(s)

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 221 Clinical Chemistry**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Fundamentals of chemistry in a clinical setting. Includes chemical substances, instruments, laboratory procedures, blood and urine chemistry abnormalities, and laboratory instrument computers and information systems.

Prerequisite(s): With a grade of B or better: BIO 205IN, and MAT 151 or assessment into MAT 189.

Information: Students must be admitted to the Medical Laboratory Technician program and obtain consent of instructor before enrolling in this course.

MLT 231 Immunohematology/Immunology**5 cr. hrs. 7 periods (4 lec., 3 lab)**

Introduction to basic immunology related to methods utilized in the clinical laboratory. Includes blood collection, blood components, immunology and complement, principles of seriological testing, genetics, blood group systems, antiglobulin testing, gel and solid phase testing, and identification of unexpected antibodies. Also includes neonatal and obstetrical transfusion practice, pre-transfusion compatibility testing, International Society of Blood Transfusion (ISBT) product labeling, adverse effects of blood transfusions, positive direct antiglobulin test (DAT), immune hemolysis, quality assurance, transplantation, and molecular testing.

Prerequisite(s): With a grade of B or better: BIO 205IN, and MAT 151 or assessment into MAT 189.

Corequisite(s)

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 251 Clinical Microbiology**5 cr. hrs. 9 periods (3 lec., 6 lab)**

Introduction to the structure, identification, and control of bacteria. Includes categories and classification of bacteria, ecology and spread of bacteria, pathogenesis of bacterial infections, clinical bacteriology methodology, various organisms, clinically significant anaerobic bacteria, methods in antimicrobial testing, mycobacteria, viruses and other microorganisms, and local disease processes.

Prerequisite(s): With a grade of B or better: BIO 205IN, and MAT 151 or assessment into MAT 189.

Corequisite(s)

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 260 Parasitology and Immunology/Serology**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduction to the basics of mycology and parasitology host relationships and their effects. Includes fungi, medical parasitology, specimen collection, techniques for examination, special techniques, other specimens, detecting and diagnosis of parasitic infections, clinically important parasites, and immunology and seriological testing.

Prerequisite(s): With a grade of B or better: BIO 205IN and MAT 151 or assessment into MAT 189.

Corequisite(s)

Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.

MLT 299 Advanced Co-op: Medical Laboratory Technician**6.5 cr. hrs. 6.5 periods (6.5 lec.)**

Comprehensive review of course work to prepare the student for national certifying examinations, provide a forum for discussion of current issues and technologies in clinical laboratory science, and augment the concurrent clinical experience. Students share their experience in the clinical area through discussion of topics of interest and presentation of case studies.

Prerequisite(s): MLT 100IN (or 100 and 100LB), 200, 211, 221, 231, 251 and 260.

Corequisite(s): MLT 299WK

Information: Consent of instructor is required before enrolling in this course. This is the capstone course for the MLT program.

MLT 299WK Advanced Co-op Work: Medical Laboratory Technician**7.5 cr. hrs. 22.5 periods (22.5 lab)**

A supervised cooperative work program for students in an occupation related area. Teacher-coordinators work with students and their supervisors in a hospital or clinic laboratory. The student develops competency and improved self confidence in the laboratory workplace.

Prerequisite(s): MLT 100IN (or 100 and 100LB), 200, 211, 221, 231, 251 and 260.

Corequisite(s): MLT 299

Information: Consent of instructor is required before enrolling in this course. Students complete a minimum of 338 clock hours of supervised placement at approved work site.

Mexican-American Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MAS 105 Introduction to Chicano Studies

3 cr. hrs. 3 periods (3 lec.)

Chicano(a) life in historical context since 1848. Includes defining Chicano(a) ideologies and realities from an interdisciplinary perspective. Also includes Chicano(a) history and culture within the world systems of Native Americans, New Spain, Mexico and the United States.

Information: Same as HIS 105.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

MAS 127 History and Culture of the Mexican-American in the Southwest

3 cr. hrs. 3 periods (3 lec.)

Historical survey of Mexicano(a)/Chicano(a) people from their indigenous origins in Meso-America and the Gran Chichimeca to the present in the United States. Includes historical writings, movements north under Spain and Mexico, repression and resistance. Also covers the political, economic, religious and social movements of the 19th, 20th and early 21st centuries.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Information: Same as ANT 127 and HIS 127.

Gen Ed: Meets AGEC - SBS and I, C, G; Meets CTE - SBS and C, G.

MAS 201 La Chicana

3 cr. hrs. 3 periods (3 lec.)

Interdisciplinary analysis of Chicanas/Mexicanas' status in the United States. Includes Chicana/Mexicana scholarship and Social Justice Movements, and Chicana/Mexicana feminism in the Southwest, Chicana/Mexicana community empowerment, Chicanas/Mexicanas on the U.S.-Mexico border.

Information: Same as GWS 201.

Music

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MUS 100 Guitar I

2 cr. hrs. 2 periods (2 lec.)

Development of the principles of guitar playing with emphasis on a variety of styles and guitar repertoire. Includes parts of the guitar, music symbols, tuning, playing position, right and left hand techniques, notes on the first through third strings, notes on the fourth string, thumb technique, chord strumming, and right-hand arpeggio patterns. Also includes notes on the fifth and sixth strings, sharps and flats, twelve (12) bar blues, right hand chord technique, and open position chords.

MUS 101 Guitar II

2 cr. hrs. 2 periods (2 lec.)

Continuation of MUS 100. Includes more detailed development of guitar skills, musicianship, sight-reading, repertoire development, ensemble playing, and improvisation.

Prerequisite(s): MUS 100.

Information: Prerequisites may be waived with consent of instructor.

MUS 102 Music Fundamentals

3 cr. hrs. 3 periods (3 lec.)

Introduction to fundamentals of music designed to develop basic literacy in music. Includes definitions and notation, rhythm and meter, intervals, scales and transposition, key signatures, triads, chords and harmony, and simple forms.

Recommendation: Students considering music as a major are encouraged to concurrently enroll in MUS 102 and 106. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA or HUM; Meets - CTE - A&H.

MUS 103 Music Theory Review

1 cr. hrs. 1 periods (1 lec.)

Intensive review of music fundamentals. Includes clefs and basic pitch notation, scales, key signatures, intervals, and triads.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 105 Introduction to Piano (Non Major)**2 cr. hrs. 2 periods (2 lec.)**

Basic principles and techniques of piano playing in a group situation. Includes study of major/minor scales and key signatures, chords, repertoire pieces, and learning and practice methods. Also includes transposition of simple compositions, sight reading, and harmonizations of melodies.

Information: Designed for non-music majors.

MUS 106 Introduction to Ear Training**2 cr. hrs. 2 periods (2 lec.)**

Ear training for individuals with little or no musical background. Includes identification of keys on a piano keyboard and notes on the musical staff, visual and aural recognition of intervals, dictation and performance of rhythmic patterns, and sight singing of melodies. Also includes major and minor key signatures and scales, singing of major and minor scales, intervals, aural identification of individual pitches, and listening to short melodic figures.

Recommendation: Students considering music as a major are encouraged to take MUS 102 and 106 concurrently.

MUS 108 Pima Jazz Band I**1 cr. hrs. 3 periods (3 lab)**

Rehearsal and performance of many styles of music in the jazz idiom. Includes interpretation of jazz literature and its notation, development of mind and body control, interpretation of jazz rhythms through listening, scales, and ensemble techniques.

Information: Students chosen by audition. *Information:* May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 109 Pima Jazz Band II**1 cr. hrs. 3 periods (3 lab)**

Continuation of MUS 108. Includes interpretation of jazz literature and its notation, development of mind and body control, interpretation of jazz rhythms, scales, and ensemble techniques.

Prerequisite(s): MUS 108.

Information: Students chosen by audition. *Information:* May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 111 Exploring Music through Piano**3 cr. hrs. 3 periods (3 lec.)**

Keyboard application skills and music fundamentals. Includes keyboard orientation, tonality, piano proficiency, musical structure, musical texture, musical style, and global topics.

Gen Ed: Meets AGEC - FA or SBS; Meets - CTE - A&H.

MUS 116 Pima Community College Orchestra I**1 cr. hrs. 3 periods (3 lab)**

Progressive development of musical skills through interpretation of orchestra literature. Includes orchestral literature and its interpretation, mind and body control, rhythms, and ensemble performance.

Information: Students chosen by audition. *Information:* May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 117 Pima Community College Orchestra II**1 cr. hrs. 3 periods (3 lab)**

Continuation of MUS 116. Includes orchestral literature and its interpretation, mind and body control, rhythms, and scales and intervals in ensemble performance.

Prerequisite(s): MUS 116.

Information: Students chosen by audition. *Information:* May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 120 Concert Band I**1 cr. hrs. 4 periods (4 lab)**

Progressive development of musical skills through interpretation of literature. Includes mind and body control, scales, and ensemble performance.

Information: Students chosen by audition. **Information:** May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 121 Concert Band II**1 cr. hrs. 4 periods (4 lab)**

Continuation of MUS 120. Includes interpretation of literature, mind and body control, scales, and ensemble performance.

Prerequisite(s): MUS 120.

Information: Students chosen by audition. **Information:** May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 125 Structure of Music I**3 cr. hrs. 3 periods (3 lec.)**

Review of music fundamentals. Includes form and analysis, non-harmonic tones and harmonic analysis, simple keyboard-style harmony, figured bass, chord functions, voicing chords, voice leading, part-writing, and seventh chords. Also includes cadences, chords in second inversion, harmonic progression, secondary dominants, and chorale harmonizations.

Corequisite(s):MUS 127

Information: Required for all other music structure courses. Students who are music majors take MUS 125 and 127 concurrently. Music majors must also concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 126 Structure of Music II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of MUS 125. Includes chromatic harmony and melody, secondary dominants and modulation, seventh and ninth chords, neapolitan and augmented sixth chords, and enharmonic relations. Also includes chromatic mediants and modulation, harmonic sequence, borrowed chords, and technical vocabulary.

Prerequisite(s): MUS 125.

Corequisite(s):MUS 129

MUS 127 Aural Perception I**1 cr. hrs. 2 periods (2 lab)**

intervallic recognition, and sight singing.

Corequisite(s):MUS 125

MUS 129 Aural Perception II**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 127. Includes aural approaches to diatonic harmony, and advanced applications for rhythmic dictation.

Prerequisite(s): MUS 127.

Corequisite(s):MUS 126

MUS 130 Chorale (SATB)**1 cr. hrs. 4 periods (4 lab)**

Selected group of mixed voices for interpretation of a wide variety of styles of music in concerts throughout the academic year. Includes progressive development of musical skills through interpretation of literature.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 131 College Singers (SATB)**1 cr. hrs. 4 periods (4 lab)**

Small chorale ensemble. Includes repertory and performance throughout the academic year with the best literature from all styles and periods. Also includes progressive development of musical skills through interpretation of literature.

Information: Students chosen by audition. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

MUS 136 Voice Class I**2 cr. hrs. 2 periods (2 lec.)**

Practical training in basic skills and singing without specialization. Includes techniques, group singing, individual practice, and individual performance.

MUS 141 Piano Class I (Majors)**1 cr. hrs. 2 periods (2 lab)**

Beginning instruction utilizing group and individual practice with electronic pianos. Includes scales, chords, repertoire, technique, practice habits, transposition of single-line melodies, and sight reading.

MUS 142 Piano Class II (Majors)**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 141. Incorporates intermediate piano instruction utilizing group and individual practice with electronic pianos. Includes scales, chords, harmonization of major and minor melodies with different accompaniment patterns, and transposition of short major and minor pieces. Also includes repertoire, continued technique and practice habits, and sight reading.

Prerequisite(s): MUS 141.

MUS 143 Piano Class III (Majors)**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 142. Incorporates intermediate piano instruction utilizing group and individual practice with electronic pianos. Includes scales, chords, arpeggios, harmonization of melodies, transpositions, repertoire pieces, technique and practice habits, sight reading, and score reading.

Prerequisite(s): MUS 142.

MUS 144 Piano Class IV (Majors)**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 143. Incorporates advanced piano instruction utilizing group and individual practice with electronic pianos. Includes scales, arpeggios, learning methods, technique building exercises, memory method, and advanced methods of practicing.

Prerequisite(s): MUS 143.

MUS 148 Musical Theater Workshop**1 cr. hrs. 3 periods (3 lab)**

Movement and singing to enhance projection and communication capabilities in musical theater. Includes exercise in stage movement, staging and memorization of scenes, performance and musical theater, and reevaluation and practice.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 149 Opera Workshop**1 cr. hrs. 3 periods (3 lab)**

Introduction to the techniques of opera. Includes exercise in stage movement, musical preparation, staging and memorization of scenes, performance of opera, and reevaluation and practice.

Information: May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 151 Exploring Music**3 cr. hrs. 3 periods (3 lec.)**

Introduction to various historical musical styles. Includes elements of music, musical instruments, the Middle Ages, the Renaissance, the Baroque and Classical eras, 19th century romanticism, 20th century, music of Mexico, and jazz styles and popular genres.

Gen Ed: Meets AGEC - FA or HUM; Meets - CTE - A&H.

MUS 152 Introduction to Music Notation Software**1 cr. hrs. 1 periods (1 lec.)**

Introduction to producing music using music notation software. Includes use of hardware and software, music notation software, and documentation of projects.

MUS 153 Introduction to Electronic Music: Sequencing and Video**2 cr. hrs. 6 periods (6 lab)**

Introduction to producing music with WAV and MP3 sounds through computer software. Includes introduction to electronic music, concepts in acoustics and music synthesis, use of hardware and software, music sequencing software, documentation of projects, song data entry from computer synthesizer keyboards, editor/library, percussion writing, and timing to video.

Information: MUS 153A and 153B together constitute MUS 153.

MUS 153A Introduction to Electronic Music: Sequencing**1 cr. hrs. 3 periods (3 lab)**

Introduction to producing music with WAV and MP3 sounds through computer software. Includes introduction to electronic music, concepts in acoustics and music synthesis, use of hardware and software, music sequencing software, and documentation of projects.

Information: MUS 153A and 153B together constitute MUS 153.

MUS 153B Introduction to Electronic Music: Video**1 cr. hrs. 3 periods (3 lab)**

Introduction to producing music with WAV and MP3 sounds through computer software. Includes song data entry from computer synthesizer keyboards, editor/library, percussion writing, and timing to video.

Prerequisite(s): MUS 153A.

Information: Prerequisite(s) may be waived with consent of instructor. MUS 153A and 153B together constitute MUS 153.

MUS 154 Jazz Improvisation**1 cr. hrs. 3 periods (3 lab)**

Study of jazz improvisation on various instruments. Includes rhythmic, melodic, and harmonic aspects of jazz styles. Also includes an emphasis on progressive development of musical skills through interpretation of literature.

Information: May be taken to times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 160 Popular Music in America**3 cr. hrs. 3 periods (3 lec.)**

Study of the history of popular music culture in America through current trends in today's society. Includes background of music, sources of music, birth of music, syncopated song and dance, jazz, crooners and jazz singers, musical theater, country music, Latin music traditions, and roots of rock and roll. Also includes impact of technology, motown and soul, rock in the seventies, and modern trends.

Gen Ed: Meets AGEC - FA or HUM; Meets - CTE - A&H.

MUS 181 Small Ensemble: Brass**1 cr. hrs. 1 periods (1 lec.)**

Performance techniques and repertoire for small ensembles using brass instruments with a weekly rehearsal schedule. Includes literature appropriate for brass ensembles, history and theory of literature, and accurate rhythmic interpretation and ensemble playing characteristics.

Information: Students chosen by faculty permission. A public performance is required. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 182 Small Ensemble: Guitar**1 cr. hrs. 1 periods (1 lec.)**

Performance techniques and repertoire for small ensembles using guitars with a weekly rehearsal schedule. Includes literature appropriate for guitar ensembles, history and theory of literature, and accurate rhythmic interpretation and ensemble playing characteristics.

Information: Students chosen by faculty permission. A public performance is required. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 183 Small Ensemble: Percussion**1 cr. hrs. 1 periods (1 lec.)**

Performance techniques and repertoire for small ensembles using percussion instruments with a weekly rehearsal schedule. Includes literature appropriate for percussion ensembles, history and theory of literature, and accurate rhythmic interpretation and ensemble playing characteristics.

Information: Students chosen by faculty permission. A public performance is required. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 184 Small Ensemble: Woodwinds**1 cr. hrs. 1 periods (1 lec.)**

Performance techniques and repertoire for small ensembles using woodwind instruments with a weekly rehearsal schedule. Includes literature appropriate for woodwind ensembles, history and theory of literature, and accurate rhythmic interpretation and ensemble playing characteristics.

Information: Students chosen by faculty permission. A public performance is required. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 185 Small Ensemble: Strings**1 cr. hrs. 1 periods (1 lec.)**

Performance techniques and repertoire for small ensembles using string instruments with a weekly rehearsal schedule. Includes literature appropriate for string ensembles, history and theory of literature, and accurate rhythmic interpretation and ensemble playing characteristics.

Information: Students chosen by faculty permission. A public performance is required. May be taken two times for a maximum of two credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUS 201 History and Literature of Music I**3 cr. hrs. 3 periods (3 lec.)**

Music history and literature from the ancient Greeks through the Baroque. Includes emphasis on specific works and composers as representative of the evolution of Western music.

Prerequisite(s): MUS 125 or concurrent enrollment.

Gen Ed: Meets AGEC - HUM; Meets - CTE - A&H.

MUS 202 History and Literature of Music II**3 cr. hrs. 3 periods (3 lec.)**

Music history and literature from Bach to the present. Includes emphasis on specific works and composers as representative of the evolution of Western music.

Prerequisite(s): MUS 125 or concurrent enrollment.

Gen Ed: Meets AGEC - HUM; Meets - CTE - A&H.

MUS 223 Structure of Music III**3 cr. hrs. 3 periods (3 lec.)**

Continuation of MUS 126. Includes the nature of polyphony, writing simple melodic lines, basic contrapuntal technique, first species, fugue, theme and variations, binary form, rounded binary form, rondo, sonata forms, and concerto form.

Prerequisite(s): MUS 126.

Corequisite(s):MUS 224

MUS 224 Aural Perception III**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 129. Includes scales, intervallic recognition, melodic dictation of melodies, chord type identification, rhythmic dictation and performing notated rhythms, syncopated rhythms, sight singing melodies and conducting while performing various rhythms and melodies.

Prerequisite(s): MUS 129.

Corequisite(s):MUS 223

MUS 226 Structure of Music IV**3 cr. hrs. 3 periods (3 lec.)**

Continuation of MUS 223. Includes extended chromaticism; aspects of form; influence of musical nationalism; compositional techniques and technical vocabulary; and late romantic and early 20th century tonal music.

Corequisite(s):MUS 228

MUS 228 Aural Perception IV**1 cr. hrs. 2 periods (2 lab)**

Continuation of MUS 224. Includes scales and modes, intervallic recognition, melodic dictation, chord type identification, chord progressions, rhythmic dictation; and syncopated rhythms, cross-rhythms, hemiola, and asymmetrical meter. Also includes sight singing melodies, and conducting while performing various rhythms and melodies. conducting while performing various

Prerequisite(s): MUS 224.

Corequisite(s):MUS 226

MUS 230 Musical Rhythms for Dance**2 cr. hrs. 2 periods (2 lec.)**

Exploration of the elements of music and music structure and their relationship to dance. Includes musical compositional forms, rhythmic dance accompaniment, musical instruments, musical scores, and creation of dance accompaniment.

Prerequisite(s): DNC 150 or 166 or 219.

MUS 257 Music Recording and Production**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the recording and production of music. Includes the elements of sound, the mixing board, hard drive recorder, microphone types and applications, recording strategies and room use, lab software for editing, mixing and re-recording, and creating a final project.

MUS 296 Independent Studies in Music**1-3 cr. hrs. 2-6 periods (2-6 lab)**

In-depth study in an area of the student's choice with approval by the supervising instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of six credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Music Studio Instruction

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MUP 061 Studio Instruction: Brass (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 062 Studio Instruction: Guitar (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 063 Studio Instruction: Percussion (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 064 Studio Instruction: Piano (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 065 Studio Instruction: Strings (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 066 Studio Instruction: Voice (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 067 Studio Instruction: Woodwinds (Pre Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Information: Audition as a music major and faculty signature required before enrolling in this course. Contact the music department for audition and placement information. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

MUP 161 Studio Instruction: Brass I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 162 Studio Instruction: Guitar I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 163 Studio Instruction: Percussion I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 164 Studio Instruction: Piano I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 165 Studio Instruction: Strings I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 166 Studio Instruction: Voice I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s):MUS 125, MUS 127

Information: Students chosen by audition.

MUP 167 Studio Instruction: Woodwinds I (Major)**2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s): MUS 125, MUS 127*Information:* Students chosen by audition.**MUP 168 Studio Instruction I: (Major)****2 cr. hrs. .5 periods (.5 lab)**

Weekly studio instruction. Includes participation in student recitals and jury exams.

Corequisite(s): MUS 125, MUS 127*Information:* Students chosen by audition.**MUP 171 Studio Instruction: Brass II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 161. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 161.*Corequisite(s):* MUS 126, MUS 129**MUP 172 Studio Instruction: Guitar II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 162. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 162.*Corequisite(s):* MUS 126, MUS 129**MUP 173 Studio Instruction: Percussion II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 163. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 163.*Corequisite(s):* MUS 126, MUS 129**MUP 174 Studio Instruction: Piano II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 164. Private weekly instrumental lessons. Includes further development of performance skills and participation in recitals and jury exams.

Prerequisite(s): MUP 164.*Corequisite(s):* MUS 126, MUS 129**MUP 175 Studio Instruction: Strings II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 165. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 165.*Corequisite(s):* MUS 126, MUS 129**MUP 176 Studio Instruction: Voice II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 166. Private weekly voice lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 166.*Corequisite(s):* MUS 126, MUS 129**MUP 177 Studio Instruction: Woodwinds II (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 167. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 167.*Corequisite(s):* MUS 126, MUS 129

MUP 178 Studio Instruction II: (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 168. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 168.*Corequisite(s):* MUS 126, MUS 129**MUP 261 Studio Instruction: Brass III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 171. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 171.*Corequisite(s):* MUS 223, MUS 224**MUP 262 Studio Instruction: Guitar III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 172. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 172.*Corequisite(s):* MUS 223, MUS 224**MUP 263 Studio Instruction: Percussion III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 173. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 173.*Corequisite(s):* MUS 223, MUS 224**MUP 264 Studio Instruction: Piano III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 174. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 174.*Corequisite(s):* MUS 223, MUS 224**MUP 265 Studio Instruction: Strings III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 175. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 175.*Corequisite(s):* MUS 223, MUS 224**MUP 266 Studio Instruction: Voice III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 176. Private weekly voice lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 176.*Corequisite(s):* MUS 223, MUS 224**MUP 267 Studio Instruction: Woodwinds III (Major)****2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 177. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 177.*Corequisite(s):* MUS 223, MUS 224

MUP 268 Studio Instruction III: (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 178. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 178.

Corequisite(s): MUS 223, MUS 224

MUP 271 Studio Instruction: Brass IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 261. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 261.

Corequisite(s): MUS 226, MUS 228

MUP 272 Studio Instruction: Guitar IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 262. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 262.

Corequisite(s): MUS 226, MUS 228

MUP 273 Studio Instruction: Percussion IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 263. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 263.

Corequisite(s): MUS 226, MUS 228

MUP 274 Studio Instruction: Piano IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 264. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 264.

Corequisite(s): MUS 226, MUS 228

MUP 275 Studio Instruction: Strings IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 265. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 265.

Corequisite(s): MUS 226, MUS 228

MUP 276 Studio Instruction: Voice IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 266. Private weekly voice lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 266.

Corequisite(s): MUS 226, MUS 228

MUP 277 Studio Instruction: Woodwinds IV (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 267. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 267.

Corequisite(s): MUS 226, MUS 228

MUP 278 Studio Instruction IV: (Major)**2 cr. hrs. .5 periods (.5 lab)**

Continuation of MUP 268. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams.

Prerequisite(s): MUP 268.

Corequisite(s): MUS 226, MUS 228

Nursing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

NRS 104 Nursing Process I**4 cr. hrs. 4 periods (4 lec.)**

NRS 104 introduces the student to the application of the nursing process and to the concepts of client, health, environment and nurse, with emphasis on caring for the adult and older adult client. This course introduces the student to behaviors that serve as the basis of effective nursing practice including a safe practitioner, an effective communicator, a manager and teacher, a culturally competent/caring healthcare provider, and professional and ethical issues of being a nurse. The student applies nursing theory in the college laboratory and the clinical setting while caring for adults and older adults in long term care and community environments.

Corequisite(s): HCA 100, NRS 104LC, NRS 104LS, NRS 108, NRS 155

Information: Acceptance into the Associate of Applied Science in Nursing; PN Exit Option through the selective admissions process including the required preparatory and prerequisites to apply to the program. Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 104LC Nursing Process I Clinical Lab**3 cr. hrs. 9 periods (9 lab)**

This is the Clinical Lab portion of NRS 104.

Corequisite(s): HCA 100, NRS 104, NRS 104LS, NRS 108, NRS 155

Information: Acceptance into the Associate of Applied Science in Nursing; PN Exit Option through the selective admissions process including the required preparatory and prerequisites to apply to the program. Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 104LS Nursing Process I Skills Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Skills Lab portion of NRS 104.

Corequisite(s): HCA 100, NRS 104, NRS 104LC, NRS 108, NRS 155

Information: Acceptance into the Associate of Applied Science in Nursing; PN Exit Option through the selective admissions process including the required preparatory and prerequisites to apply to the program. Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 105 Nursing Process II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of NRS 104. Application of the nursing process and expansion on the concepts of client, health, environment and nurse, with emphasis on caring for adult clients with common health alterations. Expansion of behaviors that are the basis of effective nursing practice including safe practitioner, effective communicator, manager and teacher, a culturally competent and caring healthcare provider, and professional and ethical issues of being a nurse. Also includes additional application of theory in the college laboratory and the clinical setting in acute care environments.

Prerequisite(s): HCA 100, NRS 104, 104LC, 104LS, 108, 155, and WRT 102.

Corequisite(s): NRS 105LC, NRS 105LS

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 105LC Nursing Process II Clinical Lab**4 cr. hrs. 12 periods (12 lab)**

This is the clinical lab portion of NRS 105.

Prerequisite(s): HCA 100, NRS 104, 104LC, 104LS, 108, 155, and WRT 102.

Corequisite(s): NRS 105, NRS 105LS

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 105LS Nursing Process II Skills Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Skills Lab portion of NRS 105.

Prerequisite(s): HCA 100, NRS 104, 104LC, 104LS, 108, 155, and WRT 102.**Corequisite(s):** NRS 105, NRS 105LC**Information:** Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.**NRS 108 Drug Calculations****1 cr. hrs. 1 periods (1 lec.)**

Computation of medication dosage. Includes basic mathematics review, systems of measurement and conversion within those systems, interpretation of drug labels, methods of medication calculation, calculations related to route of administration, and calculations related to specialty clinical areas.

Corequisite(s): HCA 100, NRS 104, NRS 104LC, NRS 104LS, NRS 155**Information:** Acceptance into the Associate of Applied Science in Nursing: PN Exit Option through the selective admissions process including the required preparatory and prerequisites to apply to the program. Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. Students must receive a grade of A on this course.**NRS 155 Introduction to Pharmacology****3 cr. hrs. 3 periods (3 lec.)**

Application of the nursing process to safe administration of drugs within major pharmacological classifications. Includes mechanisms of action, therapeutic uses, routes of administration, contraindications, adverse drug effects, drug interactions, and relevant client teaching. Also includes basic pharmacologic principles and lifespan considerations.

Corequisite(s): HCA 100, NRS 104, NRS 104LC, NRS 104LS, NRS 108**Information:** Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.**NRS 188 Transition to Associate Degree Nursing****4 cr. hrs. 4 periods (4 lec.)**

This course is developed for Licensed Practical Nurses (LPN's) seeking to enter the Associate of Applied Science in Nursing: PN Exit Option program. Application of the nursing process and expansion on the concepts of client, health, environment and nurse, with emphasis on caring for adult clients with common health alterations. Expansion of behaviors that are the basis of effective nursing practice, including safe practitioner, effective communicator, manager and teacher, a culturally competent and caring healthcare provider, and professional and ethical issues of being a nurse. Includes additional application of theory in the college laboratory and this clinical setting in acute care environments.

Corequisite(s): HCA 100, NRS 188LC, NRS 188LS**Information:** In order to enroll in this course, the student must hold a current valid Licensed Practical Nurse (LPN) license in Arizona and have completed 576 hours in direct patient care in the role of a Licensed Practical Nurse (LPN). The student must also meet all selective admission criteria for the LPN to Associate Degree Nursing (AAS) pathway before enrolling in this course. See website for details.**NRS 188LC LPN Transition to Associate Degree Nursing Clinical Lab****4 cr. hrs. 12 periods (12 lab)**

This is the Clinical Lab portion of NRS 188. This course is developed for Licensed Practical Nurses (LPN's) seeking to enter the Associate of Applied Science in Nursing: PN Exit Option program. Application of the nursing process and expansion on the concepts of client, health, environment and nurse, with emphasis on caring for adult clients with common health alterations. Expansion of behaviors that are the basis of effective nursing practice, including safe practitioner, effective communicator, manager and teacher, a culturally competent and caring healthcare provider, and professional and ethical issues of being a nurse. Includes additional application of theory in the college laboratory and this clinical setting in acute care environments.

Corequisite(s): HCA 100, NRS 188, NRS 188LS**Information:** In order to enroll in this course, the student must hold a current valid Licensed Practical Nurse (LPN) license in Arizona and have completed 576 hours in direct patient care in the role of a Licensed Practical Nurse (LPN). The student must also meet all selective admission criteria for the LPN to Associate Degree Nursing (AAS) pathway before enrolling in this course. See website for details.

NRS 188LS Transition to Associate Degree Nursing Skills Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Skills Lab portion of NRS 188. This course is developed for Licensed Practical Nurses (LPN's) seeking to enter the Associate of Applied Science in Nursing: PN Exit Option program. Application of the nursing process and expansion on the concepts of client, health, environment and nurse, with emphasis on caring for adult clients with common health alterations. Expansion of behaviors that are the basis of effective nursing practice, including safe practitioner, effective communicator, manager and teacher, a culturally competent and caring healthcare provider, and professional and ethical issues of being a nurse. Includes additional application of theory in the college laboratory and this clinical setting in acute care environments.

Corequisite(s): HCA 100, NRS 188, NRS 188LC

Information: In order to enroll in this course, the student must hold a current valid Licensed Practical Nurse (LPN) license in Arizona and have completed 576 hours in direct patient care in the role of a Licensed Practical Nurse (LPN). The student must also meet all selective admission criteria for the LPN to Associate Degree Nursing (AAS) pathway before enrolling in this course. See website for details.

NRS 196 Independent Study in Nursing**1-9 cr. hrs. 1-9 periods (1-9 lec.)**

Content to be determined by conference between student and instructor.

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 201 Nursing Process III**5 cr. hrs. 5 periods (5 lec.)**

Continuation of NRS 105 or NRS 188. Application of the nursing process and expansion of the concepts of nurse, health, client, and environment, with an emphasis on the family and child and clients with mental health disorders. Includes content related to the roles of safe practitioner, effective communicator, manager/teacher and culturally competent/caring healthcare provider. Also includes professional and ethical issues related to provision of nursing care. Also includes additional clinical application of selected nursing skills and knowledge of the developing family and child and clients with mental health disorders.

Prerequisite(s): BIO 127IN or FSN 127IN or FSN 154, NRS 105, 105LC, 105 LS (or NRS 188/188LC/188LS), and PSY 101.

Corequisite(s): NRS 201LC

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 201LC Nursing Process III Clinical Lab**4 cr. hrs. 12 periods (12 lab)**

This is the clinical lab portion of NRS 201.

Prerequisite(s): BIO 127IN or FSN 127IN or FSN 154, NRS 105, 105LC, 105LS, (or NRS 188/188LC/188LS), and PSY 101.

Corequisite(s): NRS 201

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

NRS 202 Nursing Process IV**3 cr. hrs. 3 periods (3 lec.)**

Continuation of NRS 201. Application and synthesis of the nursing process with expansion of the concepts of client, health, environment and nurse. Continues to develop performance behaviors that will serve as the basis of effective nursing practice including safe practitioner, effective communicator, manager and teacher, culturally competent and caring health care provider, and professional and ethical practitioner. Also includes the application of nursing theory in the clinical setting while caring for adults with complex health alterations.

Prerequisite(s): BIO 205IN, NRS 201, 201LC, and PSY 240 or ECE 107.

Corequisite(s): NRS 202CA, NRS 202CB

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. This course serves as the capstone for the nursing program.

NRS 202CA Nursing Process IV Clinical Lab - A**3.5 cr. hrs. 10.5 periods (10.5 lab)**

This is the Clinical Lab Part A portion of NRS 202.

Prerequisite(s): BIO 205IN, NRS 201, 201LC, and PSY 240 or, ECE 107.

Corequisite(s): NRS 202, NRS 202CB

Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. This course serves as the capstone for the nursing program.

NRS 202CB Nursing Process IV Clinical Lab - B**2.5 cr. hrs. 7.5 periods (7.5 lab)**

This is the Clinical Lab Part B portion of NRS 202.

Prerequisite(s): BIO 205IN, NRS 201, 201LC, and PSY 240 or ECE 107.**Corequisite(s):**NRS 202, NRS 202CA**Information:** Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. This course serves as the capstone for the nursing program.**NRS 203 Trends and Issues in Nursing****1 cr. hrs. 1 periods (1 lec.)**

Exploration of the role of the nurse as a safe practitioner with legal and ethical responsibilities. Includes current issues and trends in nursing and health care delivery and the role of the nurse as a member of the profession.

Prerequisite(s): BIO 205IN, NRS 201, 201LC, and PSY 240 or ECE 107.**Corequisite(s):**NRS 202, NRS 202CA, NRS 202CB**Information:** Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.

Nursing Assistant

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

NRA 101 Nursing Assistant**2 cr. hrs. 2 periods (2 lec.)**

Introduction to nursing assisting. Includes body systems and common diseases, basic nursing assisting skills, providing client care, providing restorative care, providing long-term care, home health care, and certification requirements.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):**NRA 101LC, NRA 101LS**Information:** Students must obtain consent from the Nursing Department before enrolling in this course.**NRA 101LC Nursing Assistant Clinical****1 cr. hrs. 3 periods (3 lab)**

Clinical Lab for NRA 101.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):**NRA 101, NRA 101LS**NRA 101LS Nursing Assistant Skills****1 cr. hrs. 3 periods (3 lab)**

Skills Lab for NRA 101.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):**NRA 101, NRA 101LC**NRA 102 Patient Care Technician****1 cr. hrs. 1 periods (1 lec.)**

Introduction to the role of the patient care technician. Includes legal and ethical considerations, infection control, principles of asepsis during dressing changes and catheterizations, recording an electrocardiogram, proper procedure of a venipuncture, enteral feedings, and communication and interpersonal skills.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):**NRA 102LC, NRA 102LS**Information:** Students must obtain consent from the Nursing Department before enrolling in this course. You must be a Certified Nursing Assistant or have successfully completed NRA 101 within the last two years to enroll in this course.

NRA 102LC Patient Care Tech Clinical**.67 cr. hrs. 2 periods (2 lab)**

Clinical Lab for NRA 102.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):** NRA 102, NRA 102LS**Information:** Students must obtain consent from the Nursing Department before enrolling in this course. You must be a Certified Nursing Assistant or have successfully completed NRA 101/101LC/101LS within the last two years to enroll in this course.**NRA 102LS Patient Care Tech Skills****.33 cr. hrs. 1 periods (1 lab)**

Skills lab for NRA 102.

Prerequisite(s): Within the last two years: REA 091 with a C or better or an appropriate score on the College Reading Assessment test.**Corequisite(s):** NRA 102, NRA 102LC**Information:** Students must obtain consent from the Nursing Department before enrolling in this course. You must be a Certified Nursing Assistant or have successfully completed NRA 101/101LC/101LS within the last two years to enroll in this course.

Paralegal

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PAR 101 Introduction to Paralegal Careers**3 cr. hrs. 3 periods (3 lec.)**

Role, responsibilities and ethical standards of the paralegal. Includes paralegal employment and regulation, ethical rules of the legal profession, law office administration and systems, communication, introduction to legal research and legal analysis, state and federal judicial systems, and overview of litigation and specialty areas of law.

PAR 102 Civil Litigation Procedures I**3 cr. hrs. 3 periods (3 lec.)**

Principles and procedures for commencement of civil litigation. Includes rules of civil procedure, subject matter jurisdiction, venue, statutes of limitations, parties, pleading format, preparation of complaint and answer, counterclaims, crossclaims, and third party practice. Also includes the causes of action, remedies, and potential defenses in contract and tort law.

Prerequisite(s): PAR 101 and WRT 101 or concurrent enrollment.**PAR 103 Legal Research****3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of legal research. Includes categories of research materials, citing legal material, finding and using secondary authority, finding tools. Shepards Citators, case law, constitutions, statutes and administrative law, analyzing research problems, and preparing research reports.

Prerequisite(s): PAR 101 and WRT 102.**Information:** Prerequisites may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.**PAR 104 Paralegal Ethics****3 cr. hrs. 3 periods (3 lec.)**

Rules and principles of professional responsibility in the legal field. Includes sources of the rules of legal ethics, ethical guidelines and attorney supervision of paralegals, unauthorized practice of law, confidentiality, conflicts of interest, advertising and solicitation, attorney's fees and fiduciary duties, competence, malpractice, ethical conduct issues in litigation, and professional integrity issues.

Prerequisite(s): PAR 103 or concurrent enrollment.**Information:** Prerequisite may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 106 Civil and Criminal Evidence**3 cr. hrs. 3 periods (3 lec.)**

Paralegal's role in the analysis and application of the rules of evidence. Includes relevancy and its limits, privileges, use, impeachment, and exclusion of witness, opinion and expert testimony, hearsay, authentication, and contents of writings, recordings, and photographs.

Prerequisite(s): PAR 103 or concurrent enrollment.

Information: Prerequisite may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 202 Civil Litigation Procedures II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of PAR 102. Includes discovery/disclosure procedures in Federal Court and in Arizona Superior Court, file organization and document control, pre-trial motions, gathering and organizing evidence, preparation of witnesses, alternative dispute resolutions, trial, post-trial and appellate procedures.

Prerequisite(s): PAR 102.

PAR 203 Tort Law Procedures**3 cr. hrs. 3 periods (3 lec.)**

Concepts and procedures used in tort law cases. Includes tort litigation procedures and tort case law in the areas of negligence, professional negligence, strict liability, product liability, liability issues, and insurance coverage. Also includes interviewing and investigation techniques for the paralegal in tort cases.

Prerequisite(s): PAR 101 and 102.

Information: Prerequisites may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 204 Wills, Trusts, and Estates**3 cr. hrs. 3 periods (3 lec.)**

Concepts and procedures of wills, trusts and estate planning for paralegals. Includes Arizona statutes and rules, probate and non-probate property, testate or intestate succession, will drafting and execution, will-related documents and advance directives, trusts, estate administration and related legal actions.

Prerequisite(s): PAR 101.

Information: Prerequisite(s) may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 206 Criminal Law and Procedures I**3 cr. hrs. 3 periods (3 lec.)**

Criminal law and trial processes from arrest through pre-trial procedures. Includes rules of criminal procedure, initial criminal law process, pretrial investigation and discovery, criminal and constitutional law cases, criminal statutes, and pretrial motion practice.

Prerequisite(s): PAR 101.

Information: Prerequisite may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 207 Criminal Law and Procedures II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of PAR 206. Includes rules of criminal procedure, trial rights of defendants, trial procedure, case preparation for trial, direct and cross examination, evidentiary objections, and motions for the close of evidence.

Prerequisite(s): PAR 106 or concurrent enrollment, and PAR 206.

PAR 208 Domestic Relations and Family Law**3 cr. hrs. 3 periods (3 lec.)**

Law and procedures related to family relationships and domestic matters. Includes basic principles of family law, marital contracts, legal issues in family law affecting children, initiating a divorce proceeding, contested proceedings, and assisting at a dissolution trial.

Prerequisite(s): PAR 101.

Information: Prerequisite may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 209 Bankruptcy Procedures**3 cr. hrs. 3 periods (3 lec.)**

Application of legal procedures in bankruptcy. Includes jurisdiction, cast of characters and their roles in bankruptcy, client interview, evaluation of options, advising client, and drafting Chapter 7 liquidation, Chapter 13 adjustment of debts of individuals, Chapter 12 adjustment of debts of family farmer, Chapter 11 reorganization, and the paralegal's role.

Prerequisite(s): PAR 101.

Information: Prerequisite may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 211 Legal Writing**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of legal writing. Includes writing style, editing and proofreading, legal analysis, legal brief types, and applications of legal writing for memoranda, litigation documents, and correspondence.

Prerequisite(s): PAR 103, 202 and WRT 102.

PAR 212 Law Office Computerization**3 cr. hrs. 3 periods (3 lec.)**

Application of computer software in a legal field. Includes computer hardware and software, word processing applications, database management systems, spreadsheet software, law office management, automated litigation support, telecommunications, and specialized legal software for the preparation of legal documents and document organization.

Prerequisite(s): PAR 101.

Information: Prerequisites may be waived if employed in a legal-related field; see a PAR advisor or course instructor.

PAR 213 Computer-Assisted Legal Research**3 cr. hrs. 3 periods (3 lec.)**

Computer assisted research systems. Includes historical development, full-text system; Westlaw, search techniques, and display elements, databases, special services, and Internet searching.

Prerequisite(s): PAR 103.

Information: Prerequisite may be waived with equivalent research experience; see a PAR advisor or course instructor.

PAR 215 Corporate Law Procedures**3 cr. hrs. 3 periods (3 lec.)**

Procedures and document drafting for the formation of business entities. Includes introduction to agency law, non-corporate entities, business corporations, corporation changes, forms of corporations, financing a public or private corporation, changes in corporate structure, and the role of the paralegal in corporate law.

Prerequisite(s): PAR 101.

Information: Prerequisite(s) may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 217 Real Estate Legal Procedures**3 cr. hrs. 3 periods (3 lec.)**

Legal procedures and requirements in real estate transactions and litigation. Includes real estate principles and legal concepts, recording and constructive notice, and real property taxes. Also includes an analysis of real estate contracts and purchase agreements, escrows and closings, deeds, co-ownership, legal descriptions, leases, encumbrances, liens, and foreclosures.

Prerequisite(s): PAR 101.

Information: Employment in a legal-related field or an Arizona Real Estate license may be substituted for PAR 101. See a PAR Advisor or course instructor for prerequisite information.

PAR 218 Administrative Law: Employment**1 cr. hrs. 1 periods (1 lec.)**

Concepts and procedures of employment law for paralegals. Includes an overview of employment law and regulations, and practical applications in employment law.

Prerequisite(s): PAR 101 and 103.

Information: Prerequisites may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 219 Administrative Law: Immigration**1 cr. hrs. 1 periods (1 lec.)**

Concepts and procedures of immigration law for paralegals. Includes an overview of immigration law and regulations, and practical applications in immigration law.

Prerequisite(s): PAR 101 and 103.

Information: Prerequisites may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 220 Administrative Law: Social Security**1 cr. hrs. 1 periods (1 lec.)**

Concepts and procedures of social security law for paralegals. Includes an overview of social security law and regulations, and practical applications in social security law.

Prerequisite(s): PAR 101 and 103.

Information: Prerequisites may be waived if employed in a legal-related field, or if pursuing a post-degree certificate; see a PAR advisor or course instructor.

PAR 290 Paralegal Internship**4 cr. hrs. 16 periods (1 lec., 15 lab)**

Volunteer paralegal field experience at an approved work site. Includes communications, positive work attitudes, ethics, progress review, law office systems, professional development, employment strategies, and final evaluation within a classroom seminar setting.

Prerequisite(s): PAR 104, 202 and WRT 102.

Information: Enrollment and placement contingent upon earned grade point average in PAR courses. Designed for students in their final semester of course work in the Paralegal Program. Six credit hours of PAR specialty electives from the following list must be taken - PAR 203, 204, 206, 207, 208, 209, 212, 215, 217, 218, 219, or 220. A minimum of 45 credit hours if completing the AAS Degree, or 27 credit hours in completing the certificate are required. Application and acceptance required.

Pharmacy Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PHT 170 Introduction to Pharmacy Technology**2 cr. hrs. 2 periods (2 lec.)**

An overview of the history, structure, operation, and function of the pharmacy, and the roles of the pharmacist and pharmacy support personnel. Includes: medical terminology, emphasizing common medical roots, prefixes, and suffixes; pharmaceutical abbreviations; and dosage forms and routes of administration. Also includes: information and reference resources; an introduction to third-party payment systems, HMO's, Medicare, and Medicaid; and contemporary issues, including legal and ethical aspects and future concepts in pharmacy.

Prerequisite(s): With a C or better: REA 091 or assessment into REA 112 and WRT 090 or assessment into WRT 101.

PHT 171IN Pharmaceutical Calculations**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Mathematical computations needed in the practice of pharmacy technology. Includes fundamentals of mathematical calculations, units and measures for the calculation of drug dosages, and interpretation of the prescription or medication order. Also includes calculation of drug dosages, reducing and enlarging formulas, percentage preparations, dilution and concentration, isotonic solutions and electrolyte solutions.

Prerequisite(s): PHT 170 or concurrent enrollment and MAT 092.

PHT 172 Drug Therapy I**4 cr. hrs. 4 periods (4 lec.)**

Overview of the relationship between the central nervous system (CNS), the autonomic nervous system (ANS) and pharmaceutical therapy. Includes anatomy and physiology of the CNS, neurotransmission and disorders of the CNS, therapeutic applications of drugs affecting the CNS, and characteristics of drugs of the CNS. Also includes anatomy and physiology of the ANS, drug action on ANS neurotransmission, disorders treated with autonomic drugs, and types and characteristics of autonomic drugs.

Prerequisite(s): With a C or better: REA 091 or assessment into REA 112 and WRT 090 or assessment into WRT 101, and PHT 170 or concurrent enrollment.

PHT 175IN Pharmacy Operations**5 cr. hrs. 11 periods (2 lec., 9 lab)**

An integrated course combining lecture and laboratory exercise in practical, technical, and legal aspects of drug management; distribution (dispensing); and storage in outpatient (retail), inpatient (hospital), and nursing home settings. Includes pharmacy equipment and devices, concepts related to computer operations, materials, non-sterile dosage forms, and inventory control. Also includes small or large scale compounding, packaging and quality control; practical aspects of recordkeeping, and insurance issues relevant to the daily pharmacy.

Prerequisite(s): PHT 170, PHT 171IN or concurrent enrollment.

PHT 179IN Sterile Products**5 cr. hrs. 9 periods (3 lec., 6 lab)**

Application of aseptic techniques and use of the laminar flow hood in the preparation of sterile products. Includes history of sterile products and parenteral therapy, characteristics of sterile products, principles of fluid and electrolyte therapy, basics of microbiology, antiseptics and sterilization, and sterile products calculations. Also includes introduction to IV labels and profile systems, aseptic techniques, total parenteral nutrition, incompatibilities, quality control and related pharmacy software; and specialized sterile products.

Prerequisite(s): PHT 170 and PHT 171IN

PHT 181 Interprofessional Relations in Pharmacy**3 cr. hrs. 3 periods (3 lec.)**

Overview of effective communications skills needed by the pharmacy technician to use interpersonally and between the pharmacist, the patient, and other health care professionals. Includes human relations development, personality inventory, and elements in communication in areas of non-verbal, interpersonal, barriers, listening, empathy and interviewing. Also includes building better patient understanding in special situations such as death and dying, ethnicity, conflict resolution, and ethical patient care.

Prerequisite(s): PHT 170 or concurrent enrollment.

PHT 182 Drug Therapy II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of PHT 172. Relationship between anatomy and physiology, disease states, and pharmaceutical therapy. Includes origins, dosage forms, indications, actions, routes of administration and side effects of both prescription and non-prescription drugs used in diseases of the cardiovascular, circulatory, renal, endocrine, respiratory, digestive, reproductive, and integumentary systems.

Prerequisite(s): PHT 172.

PHT 187 Pharmacy Law and Ethics**3 cr. hrs. 3 periods (3 lec.)**

Practical guide to pharmacy law and ethics for the pharmacy technician. Includes state and federal law, roles of the pharmacist and the pharmacy technician, and ethical practices for patients.

Prerequisite(s): PHT 170 or concurrent enrollment.

PHT 190LB Pharmacy Technician Internship**4 cr. hrs. 16 periods (16 lab)**

On-site training in outpatient and inpatient pharmacy services under direct supervision of designated pharmacist.

Prerequisite(s): PHT 170, 171IN, 172, 175IN, 179IN, 181, 182, and 187. PHT 174IN, 178IN, and 180IN can replace 175IN and 179IN.

Information: Consent of program coordinator is required before enrolling in this course.

PHT 197 Clinical Seminar**2 cr. hrs. 2 periods (2 lec.)**

Topics and discussions of importance to the pharmacy technician. Includes employment search preparation, research reports, and technical papers. Also includes a review of the Arizona Pharmacy Association Pharmacy Technician Certification Exam.

Prerequisite(s): PHT 170, 171IN, 172, 175IN, 179IN, 181, 182, and 187. PHT 174IN, 178IN, 180IN can replace PHT 175IN and 179IN.

Corequisite(s)

Information: Consent of program coordinator is required before enrolling in this course.

Philosophy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PHI 101 Introduction to Philosophy**3 cr. hrs. 3 periods (3 lec.)**

Survey of Western Philosophy. Includes primary source readings in western philosophic areas: logic, epistemology, ethics, social/political philosophy, philosophy of religion, metaphysics, philosophy of science, and aesthetics.

Gen Ed: Meets AGEC - HUM; Meets CTE - A&H or SBS.

PHI 120 Introduction to Logic**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the main types of logical reasoning. Includes the nature of language, deductive logic, and inductive logic.

Gen Ed: Meets AGEC - OTHER. Meets CTE - OTHER.**PHI 122 God, Mind, and Matter****3 cr. hrs. 3 periods (3 lec.)**

Introduction to the metaphysics and epistemology of the cognitive and material domains of Western philosophy. Includes philosophic method, distinctions, God, mind, and matter in ancient philosophy, medieval philosophy, modern philosophy, and contemporary philosophy and physics.

Gen Ed: Meets AGEC - HUM; Meets - CTE - A&H.**PHI 123 Philosophical Foundations of Science****3 cr. hrs. 3 periods (3 lec.)**

Introduction to Western philosophical foundations of science. Includes philosophical and scientific methods, classical, medieval, modern and contemporary science and mathematics, and philosophical problems raised by discovery and change.

Gen Ed: Meets AGEC - HUM; Meets - CTE - A&H.**PHI 130 Introductory Studies in Ethics and Social Philosophy****3 cr. hrs. 3 periods (3 lec.)**

Introduction to the study of the principles of morality and standards of conduct from a western philosophical perspective. Includes philosophical method, foundations of moral philosophy, ethical-value judgments and human nature, theories of social morality and justice, and emotions and faith.

Gen Ed: Meets AGEC - HUM; Meets CTE - A&H or SBS.**PHI 140 Philosophy of Religion****3 cr. hrs. 3 periods (3 lec.)**

Introduction to Western philosophical methods as applied to religion. Includes philosophical method, nature and meaning of religion and God, classical arguments, faith and reason, theodicy, mysticism, and the impact of religion on ethics, psychology, and law.

Information: Same as REL 140.*Gen Ed:* Meets AGEC - HUM; Meets CTE - A&H or SBS.

Phlebotomy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PHB 160 Foundations of Phlebotomy**3 cr. hrs. 3 periods (3 lec.)**

Overview of the role of phlebotomy in the healthcare profession. Includes the role of the phlebotomist within the culture of healthcare, conventions of laboratory organization and structure, the organization and purposes of laboratory departments, and the services a laboratory provides as an essential key to diagnosis. Also includes medical vocabulary, laboratory terminology, and basic anatomy and physiology with a focus on the circulatory system.

PHB 162 Safety Standards in Phlebotomy**3 cr. hrs. 3 periods (3 lec.)**

A study of phlebotomy safety practices and infection control in a laboratory setting. Includes quality controls, procedural controls, processing requirements, and transportation procedures. Also includes patient education, related legal guidelines, Occupational Safety and Health Administration (OSHA) standards, and proper equipment operation.

*Corequisite(s):*PHB 164, PHB 166LB**PHB 164 Professional Practices in Phlebotomy****3 cr. hrs. 3 periods (3 lec.)**

A survey of professional practices in phlebotomy, including values, ethical behavior in the workplace, and workers' rights and responsibilities. Includes stress management, development of positive personal communication skills, and concepts of teamwork. Also includes Occupational Safety and Health Administration (OSHA) and other regulatory requirements.

*Corequisite(s):*PHB 162, PHB 166LB

PHB 166LB Phlebotomy Laboratory Practice**2 cr. hrs. 6 periods (6 lab)**

Laboratory practice performing phlebotomy and capillary collections, including proper order of draw, labeling, and specimen handling. Includes study of basic storage, transportation, and processing. Also includes proper laboratory conduct and safety.

Corequisite(s): PHB 162, PHB 164

PHB 190LC Clinical Internship in Phlebotomy**1-3 cr. hrs. 5-15 periods (5-15 lab)**

Capstone experience for phlebotomy students. Includes an externship in the field where students practice the skills and knowledge they gain during training, such as single and multi-draw venipuncture, capillary draws, storage and transportation of specimens, testing and processing specimens, legal and ethical behaviors and documentation, and professional conduct.

Prerequisite(s): PHB 160, 162, 164 and 166LB.

Information: Credit hours will vary depending on length of time needed for student to obtain required experience for certification. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Physics

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PHY 107IN Everyday Physics: How the World Works**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to physics that explains everyday life, including Newton's Laws; why things move; energy and its conservation; momentum in everyday life; waves and energy of oscillation; light and optics; electricity and magnetism; and modern physics, including atomic and nuclear processes.

PHY 121IN Introductory Physics I**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to general physics for programs requiring a one-year, non-calculus based physics course. Includes the nature of physics; linear motion and kinematics; dynamics; work and energy; and linear momentum. Also includes rotational motion; heat; states of matter; and waves and sound.

Prerequisite(s): With a grade of B or higher: completion of MAT 189 or higher; or required score on Mathematics assessment test. Students receiving a grade of C in MAT 187 or 189 or higher will be required to register for the PHY 121RC course concurrently; for students receiving a grade of B or higher in MAT 187 or 189, PHY 121RC course is optional but highly recommended.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

PHY 121RC Introductory Physics I Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with PHY 121IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Introduction to general physics for programs requiring a one-year, non-calculus based physics course. Includes the nature of physics; linear motion and kinematics; dynamics; work and energy; and linear momentum. Also includes rotational motion; heat; states of matter; and waves and sound.

Prerequisite(s): With a C or better: completion of MAT 187 or 189, or required score on the Mathematic assessment test.

Corequisite(s): PHY 121IN

Information: Pass-Fail only. Students receiving a grade of C in MAT 187 or 189 will be required to enroll in PHY 121RC course concurrently; for students with a grade of B or higher in MAT 187 or 189, the PHY 121RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

PHY 122IN Introductory Physics II**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Continuation of PHY 121IN. Includes light, electricity, magnetism and electromagnetism, relativity, atomic physics, quantum physics, wave mechanics, and nuclear physics.

Prerequisite(s): PHY 121IN with a grade of B or better. Students receiving a grade of C in PHY 121IN will be required to register for the PHY 122RC course concurrently; for students receiving a grade of B or higher in PHY 121IN, PHY 122RC course is optional but highly recommended.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

PHY 122RC Introductory Physics II Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with PHY 122IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Continuation of PHY 121IN. Includes light, electricity, magnetism and electromagnetism, relativity, atomic physics, quantum physics, wave mechanics, and nuclear physics.

Prerequisite(s): PHY 121IN.

Corequisite(s):PHY 122IN

Information: Pass-Fail only. Students receiving a grade of C in PHY121IN will be required to enroll in PHY 122RC course concurrently; for students receiving a B grade or higher in PHY 121IN, the PHY 121RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

PHY 196 Independent Studies in Physics**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent studies and projects in physics and allied science fields. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

PHY 210IN Introductory Mechanics**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Calculus-based introduction to mechanics for physics, engineering, and mathematics majors. Includes nature of physics; linear motion and kinematics; dynamics; work and energy; linear momentum; and rotational motion.

Prerequisite(s): With a grade of B or higher: MAT 220 Students receiving a grade of C in MAT 220 will be required to register for the the PHY 210RC course concurrently; for students receiving a grade of B or higher in MAT 220, PHY 210RC course is optional but highly recommended.

Information: High school physics is strongly recommended before enrolling in this course.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

PHY 210RC Introductory Mechanics Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with PHY 210IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Calculus-based introduction to mechanics for physics, engineering, and mathematics majors. Includes nature of physics; linear motion and kinematics; dynamics; work and energy; linear momentum; and rotational motion.

Prerequisite(s): With a grade of C or higher: MAT 220.

Corequisite(s):PHY 210IN

Information: Pass-Fail only. Students receiving a grade of C in MAT 220 will be required to enroll in PHY 210RC course concurrently; for students receiving a B grade or higher in MAT 220, the PHY 210RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

PHY 216IN Introductory Electricity and Magnetism**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Calculus-based introduction to electricity and magnetism for physics, mathematics, and engineering majors. Includes electric charge and Coulomb's law, the electric field, Gauss's law, electric potential, capacitors and dielectrics, current and resistance, the magnetic field, Ampere's law and Biot-Savart law, and Faraday's law of induction. Also includes magnetic properties of matter, inductance, alternating current, Maxwell's equations, and electromagnetic waves.

Prerequisite(s): With a grade of C or higher: MAT 231 and PHY 210IN. Students receiving a grade of C in PHY 210IN will be required to register for the PHY 216RC course concurrently; for students receiving a B grade or higher in PHY 210IN, PHY 216RC is optional but highly recommended.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

PHY 216RC Introductory Electricity and Magnetism Recitation**1 cr. hrs. 1 periods (1 lec.)**

Taken concurrently with PHY 216IN. Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Calculus-based introduction to electricity and magnetism for physics, mathematics, and engineering majors. Includes electric charge and Coulomb's law, the electric field, Gauss's law, electric potential, capacitors and dielectrics, current and resistance, the magnetic field, Ampere's law and Biot-Savart law, and Faraday's law of induction. Also includes magnetic properties of matter, inductance, alternating current, Maxwell's equations, and electromagnetic waves.

Prerequisite(s): With a grade of C or higher: MAT 231 and PHY 210IN.

Corequisite(s):PHY 216IN

Information: Pass-Fail only. Students receiving a grade of C in PHY 210IN will be required to register for the PHY 216RC course concurrently; for students receiving a B grade or higher in PHY 210IN, the PHY 216RC course is optional, but highly recommended. Please be aware that if this course is not applicable toward your program of study, it is not eligible for the calculation of Federal Student Aid.

PHY 221IN Introduction to Waves and Heat**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Calculus-based introduction to waves and heat for physics, mathematics and engineering majors. Includes fluid statics and dynamics, temperature, heat and thermodynamics, kinetic theory, thermodynamics and entropy, oscillations and simple harmonic motion, and wave motion. Also includes electromagnetic waves and the propagation of light, diffraction and interference, reflection and refraction at plane surfaces, and spherical mirrors and lenses.

Prerequisite(s): With a grade of C or higher: MAT 231 and PHY 210IN.

Gen Ed: Meets AGEC - SCI; Meets CTE - M&S.

PHY 295LB Independent Research in Physics**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Experience in scientific laboratory research. Specific content to be determined by student and instructor.

Information: One semester of physics and consent of instructor is required before enrolling in this course. May be taken three times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Political Science

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

POS 100 Introduction to Politics**3 cr. hrs. 3 periods (3 lec.)**

Issues, principles, and trends in political science. Includes politics and political science, political philosophy and ideology, comparative politics, American national government, and international relations.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

POS 196 Independent Study in Political Science**2-4 cr. hrs. 2-4 periods (2-4 lec.)**

Independent readings or special projects in political science. Content to be determined by conference between student and instructor.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

POS 201 American National Government and Politics**3 cr. hrs. 3 periods (3 lec.)**

Origins, development, and current operation of the institutions and processes of American government and politics in the federal system. Includes approaches to political analysis, cultural environment of American politics, impact of race/ethnicity, class, gender, and immigration, Constitution, civil liberties and civil rights, and public opinion. Also includes linkage institutions such as political parties, interest groups, the media, and elections, and exploration of various policy areas including social welfare policymaking.

Information: The combination of both POS 201 and POS 231 satisfies the requirement for teacher certification, as does POS 210.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

POS 202 Introduction to International Relations**3 cr. hrs. 3 periods (3 lec.)**

Examination of contemporary international relations. Includes approaches to the study of international relations, international systems, actors in international systems, globalization, and major forms of interactions.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

POS 203 Introduction to Political Ideas**3 cr. hrs. 3 periods (3 lec.)**

Introductory survey of western political philosophy. Includes political philosophy as a discipline, and introduction to the ideas of key political thinkers from ancient through medieval, early modern, late modern, and contemporary periods.

Prerequisite(s): WRT 101.

Gen Ed: Meets AGEC - SBS and I; Meets CTE - SBS.

POS 204 Introduction to Comparative Politics**3 cr. hrs. 3 periods (3 lec.)**

Basic concepts and substance of comparing political systems. Includes methods of comparative political analysis, nations and states, democratic and nondemocratic systems, constitutions and political ideologies, governmental and linkage institutions and electoral systems. Also includes case studies from diverse countries are used to illustrate and explain the above concepts.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

POS 210 National and State Constitutions**3 cr. hrs. 3 periods (3 lec.)**

Principles and procedures of national and state constitutions. Includes major principles of American and Arizona Constitutionalism, historical and legal environments of the United States and Arizona constitutions, structures, powers, and responsibilities of United States government, structures of Arizona government, civil liberties and civil rights in the United States, and constitutional change.

Information: POS 210 satisfies the requirement for teacher certification as does the combination of both POS 201 and 231.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

POS 231 American State and Local Governments and Politics**3 cr. hrs. 3 periods (3 lec.)**

Basic concepts, structures, and substance of American state and local politics and government. Includes methods of political analysis, federalism and intergovernmental relations, cultural and demographic diversity in state and local politics, democracy and constitutionalism, civil rights policy, patterns and forms of political participation, electoral systems and the impact of nonpartisanship, institutions and processes of state and local governments. Also includes status features of tribal governments, and state and local policymaking.

Information: The combination of both POS 231 and POS 201 satisfies the requirement for teacher certification, as does POS 210.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

POS 240 Understanding Terrorism**3 cr. hrs. 3 periods (3 lec.)**

Analysis of terrorism as an international phenomenon. Includes terrorism definitions and perspectives, classifications of terrorism, cultural and geographical issues, responses by governments to terrorism, terrorism's future impact on the international and domestic scene, and current government reports on terrorism.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

POS 290 Political Science Internship**3 cr. hrs. 9 periods (9 lab)**

Supervised internship in a governmental or other political office. Includes placement with elected officials or candidates for public office, city, county, state, or federal governmental agencies, and advocacy groups. Also includes substantive assignments involving development and application of analytical, research and writing skills.

Prerequisite(s): WRT 101.

Information: Completion of 6 credit hours of Political Science courses are required before enrolling in this course. May take course a maximum of three times for a total of nine credit hours. If the course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Psychology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PSY 101 Introduction to Psychology**3 cr. hrs. 3 periods (3 lec.)**

Survey of psychology including history, perspectives, and methods; structure and functions of the nervous and endocrine systems; development; perception; learning; memory; intelligence, thinking and language; motivation and emotion; personality; psychopathology; psychotherapy; stress and health; and social cognition and behavior.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

PSY 101HC Introduction to Psychology: Honors**3 cr. hrs. 3 periods (3 lec.)**

Survey of psychology including history, perspectives, and methods; structure and functions of the nervous and endocrine systems; development; perception; learning; memory; intelligence, thinking and language; motivation and emotion; personality; psychopathology; psychotherapy; stress and health; and social cognition and behavior. Also may include the following Honors Content: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources; "publishable quality", peer reviewed paper or project in format appropriate for this discipline: presentation of research, in class or to a wider audience.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

PSY 132 Psychology and Culture**3 cr. hrs. 3 periods (3 lec.)**

Current knowledge about human diversity in behavior and culture using examples from a variety of contexts within western and global societies. Includes cross-cultural psychology, such as intergroup relations, diverse cognitive styles, ethnocentrism, gender, personality, emotion, language, communication, work and health. Also includes enculturation throughout the lifespan and increasing awareness of how behavioral and cognitive principles affect interactions in a multicultural world.

Recommendation: Completion of PSY 101 before enrolling in this class. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

PSY 214 Abnormal Psychology**3 cr. hrs. 3 periods (3 lec.)**

Overview of the theoretical models, diagnosis, disorders, and treatment approaches in the field of abnormal psychology. Includes history; models; anxiety and mood disorders; mind and body disorders; psychosis and cognitive functioning disorders; and life span disorders.

Prerequisite(s): PSY 101.

Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.

PSY 215 Human Sexuality**3 cr. hrs. 3 periods (3 lec.)**

Examination of human sexual experience throughout the life cycle, viewed from sociological and psychological perspectives. Includes psychological, sociological, and cultural legacy of sexuality, biological foundations of sexuality, varieties of sexual behaviors, sexuality and the life cycle, sexual problems, and social issues.

Recommendation: Completion of one of the following before enrolling in this course: PSY 101, or SOC 101. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as SOC 215.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

PSY 216 Psychology of Gender**3 cr. hrs. 3 periods (3 lec.)**

Biological and social explanations of gender development and behaviors. Includes research methods used to study gender, biological sexual differentiation, differential socialization and gender stereotyping, gender differences, limitations of traditional gender roles, cross-cultural gender issues, and changing gender roles.

Recommendation: Completion of PSY 101 before enrolling in this course. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

PSY 218 Health Psychology**3 cr. hrs. 3 periods (3 lec.)**

Overview of health psychology in relationship to cultural diversity in the United States, and awareness of the universal aspect of humanity. Includes mind-body relationships, behavior risk factors, and psychosocial aspects of specific disorders. Also includes health psychology, social, economic, and political dimensions of relationships between and among ethnic and gender groups.

Recommendation: Completion of PSY 100A or 100B or PSY 101 before enrolling in this course. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

PSY 220 The Psychology of Death and Loss**3 cr. hrs. 3 periods (3 lec.)**

Adjustment to death and loss. Includes thinking about death, meaning of death, death system, dying, hospice, and end-of-life issues. Also includes suicide, violent death, euthanasia, bereavement, funeral process, near death experiences, and death education and counseling.

Recommendation: Completion of PSY 101 before enrolling in this course. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

PSY 224 Investigating Paranormal Psychology**3 cr. hrs. 3 periods (3 lec.)**

Survey of experiments and case studies in paranormal phenomena. Includes extrasensory perception, psychokinesis, and reports of near-death experiences. Also includes research methodologies and potential applications.

Recommendation: Completion of PSY 101 before enrolling in this class. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

PSY 230 Psychological Measurements and Statistics**3 cr. hrs. 3 periods (3 lec.)**

Measurement, quantitative description and statistical inference as applied to psychological variables. Includes scientific research and statistics, descriptive statistics, inferential statistics, correlation and linear regression, and non-parametric tests.

Prerequisite(s): PSY 101, and completion of MAT 097, 142, 151 or higher with a C or better.

Information: Prerequisite(s) may be waived with consent of instructor before enrolling in the class.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

PSY 240 Developmental Psychology**3 cr. hrs. 3 periods (3 lec.)**

Human development from conception through adulthood. Includes physical, cognitive, emotional, and social development milestones at various periods in the lifespan. Also includes research methods used in developmental psychology, and the exploration of empirical literature in psychology as it relates to developmental issues.

Prerequisite(s): PSY 101.

Information: Prerequisite(s) may be waived with consent of instructor before enrolling in the class.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

PSY 254 Psychology of Love and Compassion**3 cr. hrs. 3 periods (3 lec.)**

Introduction to theory and research on the psychology of love and caring. Includes applications to mental, physical and spiritual health. Also includes gender behaviors and expectations in loving relationships.

Recommendation: Completion of PSY 101. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

PSY 262 Positive Psychology**3 cr. hrs. 3 periods (3 lec.)**

An introduction to research, theory and intellectual history of positive psychology. Overview and application of psychological principles relevant to the nature of happiness and psychological well-being as opposed to dysfunction and symptoms of mental disorders. Includes research methods, authenticity, happiness, mindfulness, positive interventions, emotional intelligence, character strengths, creativity, and core values and virtues.

Recommendation: PSY 101 with a C or better. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

PSY 289 Psychology Research Methods

4 cr. hrs. 6 periods (3 lec., 3 lab)

Introduction to scientific methodologies used in psychological research. Includes experience in using a range of psychological research methods for students.

Prerequisite(s): PSY 101, PSY 230, and WRT 101 with a grade of C or better.

Recommendation: Designed for students planning to major or minor in psychology.

Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.

ROTC - Air Force

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MLA 100 Heritage and Values of the United States Air Force I

2 cr. hrs. 2 periods (2 lec.)

Heritage and Values of the United States Air Force is the first half of a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force.

Information: United States Air Force Reserve Officers' Training Corps (AFROTC) Cadets must attend a Leadership seminar on Monday from 5:30 A.M. to 7:30 A.M. Course offered in cooperation with the University of Arizona.

MLA 101 Heritage and Values of the United States Air Force II

2 cr. hrs. 2 periods (2 lec.)

Heritage and Values of the United States Air Force II is the second half of a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force.

Information: United States Air Force Reserve Officers' Training Corps (AFROTC) Cadets must attend a Leadership seminar on Monday from 5:30 A.M. to 7:30 A.M. Course offered in cooperation with the University of Arizona.

MLA 110 Military Aerospace Physical Training Program

1 cr. hrs. 2 periods (2 lab)

Introduction to the Air Force physical training program. Includes attention to the group's physical ability, emphasis on individual physical abilities, and gradual increase to a higher level of physical fitness. Also includes establishment of goals and standards for conduct in physical training, and prepares the student to pass the Air Force Physical Fitness Assessment (AF PFA).

Information: Initial dates for the AF PFA will be determined the first week of class and identified in the cadet wing calendar.

MLA 200 Team and Leadership Fundamentals I

2 cr. hrs. 2 periods (2 lec.)

Team and Leadership Fundamentals I is the first half of a survey course that focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience, where they will be able to put the concepts, learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate.

Information: United States Air Force Reserve Officers' Training Corps (AFROTC) Cadets must attend a Leadership seminar on Monday from 5:30 A.M. to 7:30 A.M. Course offered in cooperation with the University of Arizona.

MLA 201 Team and Leadership Fundamentals II

2 cr. hrs. 2 periods (2 lec.)

Team and Leadership Fundamentals I is the first half of a survey course that focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate.

Information: United States Air Force Reserve Officers' Training Corps (AFROTC) Cadets must attend a Leadership seminar on Monday from 5:30 A.M. to 7:30 A.M. Course offered in cooperation with the University of Arizona.

ROTC - Army

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

MLS 100 Introduction to Military Skills I

3 cr. hrs. 3 periods (3 lec.)

Introduction to Army leadership and the Reserve Officers' Training Corps (ROTC) program. Includes role of the U.S. Army, principles and techniques of applied leadership, customs, traditions and military courtesy, basic marksmanship, first aid, land navigation, and small-unit tactics.

Information: Course offered in cooperation with the University of Arizona. Field trip may be required to Ft. Huachuca, AZ.

MLS 101 Introduction to Military Skills II

3 cr. hrs. 3 periods (3 lec.)

Continuation of MLS 100. Introduction to Army leadership and the Reserve Officers' Training Corps (ROTC) program. Includes U.S. Army tactical concepts such as map reading, land navigation, and general operations. Also includes Adaptive Leader Methodology (ALM) and development of leader character presence, intellect, and intelligence.

Prerequisite(s): MLS 100 with a C or better.

Information: Course offered in cooperation with the University of Arizona. Field trip may be required to Ft. Huachuca, AZ. Prerequisite may be waived with consent of instructor.

MLS 102 Army Physical Training

1 cr. hrs. 1.5 periods (.5 lec., 1 lab)

Introduction to the importance of physical fitness and its life long benefits. Includes physical conditioning, establishing goals and setting standards for physical training.

Information: Course offered in cooperation with the University of Arizona. Student must also be enrolled in MLS 100,101, 200, or 201.

MLS 200 Army Leadership Dynamics I

3 cr. hrs. 3 periods (3 lec.)

Foundations of tactical leadership strategies and styles. Includes development of attributes and core leadership competencies of Army rank, structure, and duty. Also includes personal motivation and team building through planning, executing, assessing team exercises, and leadership sessions.

Prerequisite(s): MLS 100 and 101 with a C or better.

Information: Course offered in cooperation with the University of Arizona. Field trip may be required to Ft. Huachuca, AZ. Prerequisite may be waived with consent of instructor.

MLS 201 Army Leadership Dynamics II

3 cr. hrs. 3 periods (3 lec.)

Continuation of MLS 200. Foundations of tactical leadership strategies and styles. Includes challenges of leading tactical teams in the operational environment; dynamics of adaptive leadership in military operations; and development of individual leadership styles. Also includes self-awareness, communications, and team building skills.

Prerequisite(s): MLS 200 with a C or better.

Information: Course offered in cooperation with the University of Arizona. Field trip may be required to Ft. Huachuca, AZ. Prerequisite may be waived with consent of instructor.

MLS 296 Independent Study in Military Science

3 cr. hrs. 3 periods (2 lec., 1 lab)

Advanced level study in leadership, values and ethics, personal development, officership, tactics and techniques, and effective writing. Includes topics that contribute to the development of professional and proficient cadets and officers.

Information: Course offered in cooperation with the University of Arizona. See an instructor before enrolling in this course.

ROTC - Navy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

NSP 100 Naval Laboratory I

1 cr. hrs. 2 periods (2 lab)

Overview of the Naval service. Includes drill and ceremonies, physical fitness, cruise preparation, sail training, safety awareness, and personal finances. Also includes applied exercises in naval ship systems, navigation, naval operations, naval administration, and military justice.

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program at the University of Arizona is required before enrolling in this course. Course offered in cooperation with the University of Arizona. May be taken four times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

NSP 101 Introduction to Naval Science**3 cr. hrs. 3 periods (3 lec.)**

Provides the general military information required of a junior officer in the naval service by introducing structure, mission, and long held customs and traditions. Includes a brief description of each community within the Navy, an outline of Military Law as it applies to the junior officer, sea power and its implications, and shipboard damage control and safety.

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program at the University of Arizona is required before enrolling in this course. Course offered in cooperation with the University of Arizona.

NSP 102 Naval Ship Systems I**3 cr. hrs. 3 periods (3 lec.)**

Overview of naval ship systems engineering. Includes the fundamentals of ship construction, stability, damage control and repair, basic thermodynamics, and steam and nuclear propulsion systems.

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program at the University of Arizona is required before enrolling in this course. This course is offered in cooperation with the University of Arizona.

NSP 110 Navy/Marine Physical Training**1 cr. hrs. 2 periods (2 lab)**

Introduction to Navy and Marine Corps physical training. Includes physical fitness and physical leadership through running, swimming, calisthenics, circuit training, obstacle course, and team-effort events. Also includes establishment of goals and standards for conduct in physical training, and prepares the student to pass the Navy Personal Fitness Assessment (PFA) or the Marine Corps Physical Fitness Test (PFT) and Combat Fitness Test (CFT).

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program (Marine Option) at the University of Arizona is required before enrolling in this course. Course offered in cooperation with the University of Arizona. A final physical fitness test will be run during the last month of the course.

NSP 201 Naval Ship Systems II**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the basic concepts in detection, tracking, and destruction of enemy forces. Emphasis will be placed on the fundamentals of weapon systems theory, principles, and application. Discussion of past, present, and future weapons will be included to understand the evolution of weapons systems components and their applications.

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program (Marine Option) at the University of Arizona is required before enrolling in this course. Course offered in cooperation with the University of Arizona.

NSP 202 Sea Power and Maritime Affairs**3 cr. hrs. 3 periods (3 lec.)**

United States (U.S.) Naval history from the American Revolution to the present. Includes the general concept of sea power, the role of various warfare components of the Navy in supporting its mission, the implementation of sea power as an instrument of national policy, and a comparative study of U.S. and Soviet naval strategies.

Information: Acceptance into the Navy Reserve Officers' Training Corps (ROTC) program (Marine Option) at the University of Arizona is required before enrolling in this course. Course offered in cooperation with the University of Arizona.

Radiologic Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

RAD 170 Medical Imaging Fundamentals**2 cr. hrs. 2 periods (2 lec.)**

Principles of radiographic imaging. Includes program orientation, production of diagnostic radiation, image formation, ethics and professionalism, patient care and assessment, age specific care considerations, and radiographic positioning of the abdomen and chest.

Corequisite(s): RAD 170LB

Information: Consent of program director is required before enrolling in this course.

RAD 170LB Medical Imaging Fundamentals Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of RAD 170. Principles of radiographic imaging. Includes program orientation, production of diagnostic radiation, image formation, ethics and professionalism, patient care and assessment, age specific care considerations, and radiographic positioning of the abdomen and chest.

Corequisite(s): RAD 170

Information: Consent of program director is required before enrolling in this course.

RAD 171 Radiographic Positioning I**3 cr. hrs. 3 periods (3 lec.)**

Overview of radiographic procedures. Includes standard terms, general considerations, positioning considerations for routine and special radiographic procedures, and radiographic positions of the upper extremities, shoulder girdle, and lower extremities.

Prerequisite(s): BIO 201IN, RAD 170 and 170LB.

Corequisite(s): RAD 171LB, RAD 172, RAD 172LB, RAD 173LC

Information: Consent of program director is required before enrolling in this course.

RAD 171LB Radiographic Positioning I Lab**.75 cr. hrs. 2.5 periods (2.5 lab)**

This is the lab portion of RAD 171. Review of radiographic procedures. Includes standard terms, general considerations, positioning considerations for routine and special radiographic procedures, and radiographic positions of the upper extremities, shoulder girdle, and lower extremities.

Prerequisite(s): AIS/HIS 122 or AIS/ANT 206, BIO 201IN, PSY 101, RAD 170, 170LB, and WRT 102.

Corequisite(s): RAD 171, RAD 172, RAD 172LB, RAD 173LC

Information: Consent of program director is required before enrolling in this course.

RAD 172 Medical Imaging Technology I**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the principles of x-ray production. Includes matter and the atom, mass and energy; electricity, magnetism, and electromagnetism; x-ray tubes, x-ray generators, diagnostic x-ray systems, ALARA guidelines and practices, and the prime factors.

Prerequisite(s): BIO 201IN, RAD 170 and 170LB.

Corequisite(s): RAD 171, RAD 171LB, RAD 172LB, RAD 173LC

Information: Consent of program director is required before enrolling in this course.

RAD 172LB Medical Imaging Technology I Lab**.5 cr. hrs. 1.5 periods (1.5 lab)**

This is the lab portion of RAD 172. Introduction to the principles of x-ray production. Includes matter and the atom, mass and energy; electricity, magnetism, and electromagnetism; x-ray tubes, x-ray generators, diagnostic x-ray systems, ALARA guidelines and practices, and the prime factors.

Prerequisite(s): BIO 201IN, RAD 170 and 170LB.

Corequisite(s): RAD 171, RAD 171LB, RAD 172, RAD 173LC

Information: Consent of program director is required before enrolling in this course.

RAD 173LC Clinical Education I**6 cr. hrs. 24 periods (24 lab)**

Introduction to the first clinical practicum. Includes clinical site orientation, radiographic equipment and supplies, exam protocols, and routine and special radiographic examinations.

Prerequisite(s): BIO 201IN, RAD 170 and 170LB.

Corequisite(s): RAD 171, RAD 171LB, RAD 172, RAD 172LB

Information: Clinical Education Centers may require additional fees and a tuberculosis skin test. Students must be admitted to RAD program before enrolling in this course. Competency-based assignments, concepts of patient-centered clinical practice and professional development shall be discussed, examined, performed and evaluated under the supervision of a certified Radiologic Technologist. The clinical practicum incorporates critical analysis, integration, synthesis and evaluation of concepts and theories in the performance of radiographic procedures.

RAD 174 Radiographic Positioning II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RAD 171. Includes routine and special positioning of the pelvis, hips, SI joints, bony thorax, and vertebral column. Also includes pediatric radiography, trauma/surgical mobile radiography, and related osseous system pathology.

Prerequisite(s): Rad 171, 171LB, 172, 172LB, and 173LC.

Corequisite(s): RAD 174LB, RAD 175, RAD 175LB, RAD 176LC

Information: Consent of program director is required before enrolling in this course.

RAD 174LB Radiographic Positioning II Lab**.75 cr. hrs. 2.25 periods (2.25 lab)**

This is the lab portion of RAD 174. Continuation of RAD 171. Includes routine and special positioning of the pelvis, hips, SI joints, bony thorax, and vertebral column. Also includes pediatric radiography, trauma/surgical mobile radiography, and related osseous system pathology.

Prerequisite(s): RAD 171, 171LB, 172, 172LB, and 173LC.

Corequisite(s): RAD 174, RAD 175, RAD 175LB, RAD 176LC

Information: Consent of program director is required before enrolling in this course.

RAD 175 Medical Imaging Technology II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RAD 172/172LB. Includes concepts of radiographic image quality, x-ray interactions with matter, formulation of x-ray techniques, automatic exposure control, and x-ray detection devices.

Prerequisite(s): RAD 171, 171LB, 172, 172LB, and 173LC.

Corequisite(s): RAD 174, RAD 174LB, RAD 175LB, RAD 176LC

Information: Consent of program director is required before enrolling in this course.

RAD 175LB Medical Imaging Technology II Lab**.5 cr. hrs. 1.5 periods (1.5 lab)**

This is the lab portion of RAD 175. Continuation of RAD 172/172LB. Includes concepts of radiographic image quality, x-ray interactions with matter, formulation of x-ray techniques, automatic exposure control, and x-ray detection devices.

Prerequisite(s): RAD 171, 171LB, 172, 172LB, and 173LC.

Corequisite(s): RAD 174, RAD 174LB, RAD 175, RAD 176LC

Information: Consent of program director is required before enrolling in this course.

RAD 176LC Clinical Education II**6 cr. hrs. 24 periods (24 lab)**

Continuation of RAD 173LC. Includes routine and special radiographic procedures, trauma and mobile radiography, osseous pathology, and pediatric radiography.

Prerequisite(s): RAD 171, 171LB, 172, 172LB, and 173LC.

Corequisite(s): RAD 174, RAD 174LB, RAD 175, RAD 175LB

Information: Clinical Education Centers may require additional fees and a tuberculosis skin test. Student must be admitted to the RAD program before enrolling in this course. Competency-based assignments, concepts of patient-centered clinical practice and professional development shall be discussed, examined, performed and evaluated under the supervision of a certified Radiologic Technologist. The clinical practicum incorporates critical analysis, integration, synthesis and evaluation of concepts and theories in the performance of radiographic procedures.

RAD 177LC Clinical Education III**4.5 cr. hrs. 18 periods (18 lab)**

Continuation of RAD 176LC. Includes routine and special radiographic procedures, mobile radiography, emergency department procedures, and observation and assisting in fluoroscopic procedures.

Prerequisite(s): RAD 174, 174LB, 175, 175LB, and 176LC.

Information: Clinical Education Centers may require additional fees and a tuberculosis skin test. Student must be admitted to the RAD program before enrolling in this course. Competency-based assignments, concepts of patient-centered clinical practice and professional development shall be discussed, examined, performed and evaluated under the supervision of a certified Radiologic Technologist. The clinical practicum incorporates critical analysis, integration, synthesis and evaluation of concepts and theories in the performance of radiographic procedures.

RAD 180 Introduction to Radiation Biology**1 cr. hrs. 1 periods (1 lec.)**

An introduction to radiobiological concepts and principles. Includes history of radiobiology, fundamental radiation units, biologic and physical factors of cell and tissue radiosensitivity, and radiation induced malignancies.

Prerequisite(s): RAD 177LC.

Corequisite(s): RAD 181, RAD 182, RAD 183LC

Information: Consent of program director is required before enrolling in this course.

RAD 181 Radiographic Positioning III**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RAD 174. Includes radiographic positioning and fluoroscopic procedures of the urinary system, pharmacodynamics of radiopaque contrast media, intravenous drug administration technique (venipuncture), the digestive system, the biliary system, and pathology.

Prerequisite(s): RAD 174, 174LB, and 177LC.

Corequisite(s): RAD 180, RAD 181LB, RAD 182, RAD 183LC

Information: Consent of program director is required before enrolling in this course.

RAD 182 Medical Imaging Technology III**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RAD 175. Includes image intensification, digital fluoroscopy, special imaging procedures, quality control, other imaging modalities, and professional roles and behaviors.

Prerequisite(s): RAD 175, 175LB, and 177LC.

Corequisite(s): RAD 180, RAD 181, RAD 181LB, RAD 183LC

Information: Consent of program director is required before enrolling in this course.

RAD 183LC Clinical Education IV**5 cr. hrs. 20 periods (20 lab)**

Continuation of RAD 177LC. Includes diagnostic and fluoroscopic equipment and procedures, contrast media policies and protocols, intravenous administration, and routine and special examinations.

Prerequisite(s): RAD 177LC.

Corequisite(s): RAD 180, RAD 181, RAD 181LB, RAD 182

Information: Clinical Education Centers may require additional fees and a tuberculosis skin test. Student must be admitted to RAD program before enrolling in this course. Competency-based assignments, concepts of patient-centered clinical practice and professional development shall be discussed, examined, performed and evaluated under the supervision of a certified Radiologic Technologist. The clinical practicum incorporates critical analysis, integration, synthesis and evaluation of concepts and theories in the performance of radiographic procedures.

RAD 184 Radiographic Positioning IV**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RAD 181. Includes positioning and anatomy of the skull and facial bones, acute medical emergencies, infection control and preventing transmissible diseases, review of vital signs, and the second part of radiation biology.

Prerequisite(s): RAD 180, 181, 182, and 183LC.

Corequisite(s): RAD 184LB, RAD 185, RAD 186LC

Information: Consent of program director is required before enrolling in this course.

RAD 184LB Radiographic Positioning IV Lab**.5 cr. hrs. 1.5 periods (1.5 lab)**

This is the lab portion of RAD 184. Continuation of RAD 181. Includes positioning and anatomy of the skull and facial bones, acute medical emergencies, infection control and preventing transmissible diseases, review of vital signs, and the second part of radiation biology.

Prerequisite(s): RAD 180, 181, 182, and 183LC.

Corequisite(s): RAD 184, RAD 185, RAD 186LC

Information: Consent of program director is required before enrolling in this course.

RAD 185 Clinical Seminar**2.5 cr. hrs. 2.5 periods (2.5 lec.)**

This is a capstone course. Includes review of radiographic procedures and exams, image acquisition and evaluation, patient care, equipment operation/maintenance/quality control, radiation protection and safety, and completion of registry mock exams.

Prerequisite(s): RAD 180, 181, 182, and 183LC.

Corequisite(s): RAD 184, RAD 184LB, RAD 186LC

Information: Consent of program director is required before enrolling in this course. This is a capstone course which includes review of program curriculum and instruction in applying to the American Registry of Radiologic Technology (AART) and the Medical Radiologic Technology Board of Examiners (MRTBE). The course includes review sessions, written mock registry and multiple computerized exams.

RAD 186LC Clinical Education V**6 cr. hrs. 24 periods (24 lab)**

Continuation of RAD 183LC. Includes skull and facial bones radiographic procedures, advanced modality rotations, and image critique and evaluation.

Prerequisite(s): RAD 180, 181, 182, and 183LC.

Corequisite(s): RAD 184, RAD 184LB, RAD 185

Information: Clinical Education Centers may require additional fees and a tuberculosis skin test. Student must be admitted to the RAD program before enrolling in this course. Competency-based assignments, concepts of patient-centered clinical practice and professional development shall be discussed, examined, performed and evaluated under the supervision of a certified Radiologic Technologist. The clinical practicum incorporated critical analysis, integration, synthesis and evaluation of concepts and theories in the performance of radiographic procedures

Reading

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

REA 071 Reading Fundamentals**4 cr. hrs. 4 periods (4 lec.)**

Development of fundamental reading strategies. Includes extensive development of word analysis, vocabulary, information literacy, and reading strategies necessary to assure successful comprehension at the literal and interpretive levels.

Information: Designed for persons who need an intensive review of the basic reading strategies.

REA 081 Reading Improvement I**4 cr. hrs. 4 periods (4 lec.)**

Improvement of basic reading strategies. Includes development of word analysis, vocabulary, information literacy, and reading strategies necessary to assure successful comprehension at the literal level and interpretive levels.

Prerequisite(s): REA 071 with a C or better or required score on the Reading Assessment test.

Information: Designed for persons who need to improve strategies in order to increase their success in college. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

REA 091 Reading Improvement II**4 cr. hrs. 4 periods (4 lec.)**

Development of reading strategies. Includes vocabulary comprehension, study strategies, metacognition, information literacy, and community of readers.

Prerequisite(s): With a C or better: ESL 088RV or REA 081 or required score on the Reading assessment test.

Information: May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

REA 112 Critical Reading**4 cr. hrs. 4 periods (4 lec.)**

Development of college reading strategies. Includes comprehension strategies at the college level, critical reading and thinking, information literacy, vocabulary development, and advanced study strategies.

Prerequisite(s): Requires both Reading and Writing prerequisites. Reading: ESL 088RV with a B or better, or REA 091 with a C or better, or required score on the Reading assessment. Writing: ESL 088WG with a B or better, or WRT 070 with a C or better, or required score on the Writing assessment.

Information: Student may be admitted with instructor recommendation.

REA 112HP Critical Reading for Health Professions**4 cr. hrs. 4 periods (4 lec.)**

Development of college reading strategies. Includes comprehension strategies at the college level, critical reading and thinking, information literacy, vocabulary development, and advanced study strategies.

Prerequisite(s): Requires both Reading and Writing prerequisites. Reading: ESL 088RV with a B or better, or REA 091 with a C or better, or required score on the Reading assessment. Writing: ESL 088WG with a B or better, or WRT 070 with a C or better, or required score on the Writing assessment.

Recommendation: Recommended for students pursuing an associate's degree in Nursing, Radiologic Technology, Respiratory Therapy or Dental Hygiene Education.

Information: Students must obtain consent of an advisor, counselor, or reading instructor before enrolling in this course. Equivalent to REA 112.

Religion

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

REL 119 Judaism, Christianity, and Islam

3 cr. hrs. 3 periods (3 lec.)

Introduction to the three major western religions. Includes nature of religious belief, development of Judaism, teachings of Judaism, festivals and rituals of Judaism, development of Christianity, teachings of Christianity, Christian festivals and rituals, development of Islam, teachings of Islam, Islamic festivals and rituals, and common heritage, emphasis, and variations of Judaism, Christianity, and Islam.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE - OTHER and G.

REL 130 Asian Religions

3 cr. hrs. 3 periods (3 lec.)

Religions of India and the Far East. Includes Hinduism, Buddhism, and East Asian religions.

Gen Ed: Meets AGEC - HUM and G; Meets CTE - A&H or SBS and G.

REL 140 Philosophy of Religion

3 cr. hrs. 3 periods (3 lec.)

Introduction to Western philosophical methods as applied to religion. Includes philosophical method, nature and meaning of religion and God, classical arguments, faith and reason, theodicy, mysticism, and the impact of religion on ethics, psychology, and law.

Information: Same as PHI 140.

Gen Ed: Meets AGEC - HUM; Meets CTE - A&H or SBS.

REL 200 Religion in Popular Culture

3 cr. hrs. 3 periods (3 lec.)

Exploration of the relationship between religion and contemporary society. Includes representation of religion in popular culture, function of religion as popular culture, and conflicts between religion and popular culture. Also includes a focus on popular media, such as movies, television, music, news, advertising, and recreation.

Gen Ed: Meets AGEC - HUM and C; Meets CTE - A&H or SBS and C.

REL 220 Old Testament

3 cr. hrs. 3 periods (3 lec.)

Major books of the Old Testament. Includes literary forms, historical context, moral implications of the literature, and religious significance.

Gen Ed: Meets AGEC - HUM; Meets CTE - A&H or SBS.

REL 221 New Testament

3 cr. hrs. 3 periods (3 lec.)

Major books of the New Testament. Includes literary forms, historical context, moral implications of the literature, and religious significance.

Gen Ed: Meets AGEC - HUM; Meets CTE - A&H or SBS.

Respiratory Therapy

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

RTH 110 Introduction to Respiratory Care

2 cr. hrs. 2 periods (2 lec.)

Introduction to the field of respiratory care and to the skills for being a successful, confident college student. Includes study strategies, college resources, time management, life choices, respiratory care practice settings, elements of effective team dynamics, communication with diverse populations, and ethical decision making and professional responsibility.

Corequisite(s): RTH 156

Information: Students must meet all pre-admission requirements for the PCC Respiratory Therapy Program and receive final approval to register for this course. Please see a program advisor.

RTH 112 Respiratory Physiology**4 cr. hrs. 4 periods (4 lec.)**

Study of the cardiopulmonary system and associated structures. Includes the anatomy of the respiratory system, ventilation and diffusion of pulmonary gases, the circulatory system, oxygen and carbon dioxide transport, control of ventilation, and renal failure and its effects on the cardiopulmonary system.

Corequisite(s):RTH 110, RTH 121, RTH 121LB, RTH 156

Information: Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. See a faculty advisor prior to enrollment.

RTH 121 Basic Therapeutics**3 cr. hrs. 3 periods (3 lec.)**

Basic respiratory care therapeutics, equipment function, clinical indications and contraindications. Includes medical gas therapy, oxygen delivery devices, humidity and aerosol therapy, hyperinflation therapy, chest physical therapy, and basic airway management.

Corequisite(s):RTH 110, RTH 112, RTH 121LB, RTH 156

Information: Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. See a program advisor prior to enrollment.

RTH 121LB Basic Therapeutics Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of RTH 121. Basic respiratory care therapeutics, equipment function, clinical indications and contraindications. Includes medical gas therapy, oxygen delivery devices, humidity and aerosol therapy, hyperinflation therapy, chest physical therapy, and basic airway management.

Corequisite(s):RTH 110, RTH 112, RTH 121, RTH 156

Information: Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. See a program advisor prior to enrollment.

RTH 123 Basic Assessment and Monitoring**3 cr. hrs. 3 periods (3 lec.)**

Study of patient assessment and monitoring of the cardiopulmonary impaired patient. Includes bedside respiratory assessment, clinical laboratory studies assessment, oxygenation and ventilation, pulmonary function measurements, clinical application of chest radiography, and basic interpretation of electrocardiogram tracing.

Prerequisite(s): RTH 110, 112, 121, 121LB, and 156.

Corequisite(s):RTH 123LB, RTH 124, RTH 162

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 123LB Basic Assessment and Monitoring Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of RTH 123. Study of basic assessment and monitoring of the cardiopulmonary impaired patient. Includes bedside respiratory assessment, clinical laboratory studies assessment, oxygenation and ventilation, pulmonary function measurements, clinical application of chest radiography, and basic interpretation of electrocardiogram tracing.

Prerequisite(s): RTH 110, 112, 121, 121LB, and 156.

Corequisite(s):RTH 123, RTH 124, RTH 162

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 124 Pharmacology for Respiratory Care**3 cr. hrs. 3 periods (3 lec.)**

Principles of pharmacology and drug receptor theory as it relates to patients with cardiopulmonary disease. Includes general principles of pharmacology, drug dose calculations, central and peripheral nervous system, bronchodilators, drugs used to control airway mucus and edema, and drugs used in the management of ventilator patients and patients with cardiorespiratory disorders.

Prerequisite(s): RTH 110, 112, 121, 121LB, and 156.

Corequisite(s):RTH 123, RTH 123LB, RTH 162

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 135LC Clinical Procedures I**4 cr. hrs. 16 periods (16 lab)**

Clinical application of all prerequisite and concurrent respiratory care course work. Includes hospital/clinical site orientations, review of hospital respiratory department administration, departmental policies, procedures, reporting systems, and medical record data entry. Also includes utilization of the medical record to retrieve information, therapist observation, medical gas therapy, and patient assessment and monitoring. Didactic competencies include: infection control procedures, medical asepsis, equipment disinfection and processing, aerosol and humidity therapy, medical gas therapy, IPPB therapy, incentive spirometry, and chest physiotherapy, airway management, cardiopulmonary resuscitation, arterial blood gases and evaluation, and group case study presentation.

Prerequisite(s): RTH 123, 123LB, 124, and 162.

Corequisite(s): HCA 152

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 156 Cardiopulmonary Diseases I**3 cr. hrs. 3 periods (3 lec.)**

Study of commonly encountered cardiopulmonary diseases in the adult patient. Includes infectious pulmonary diseases, obstructive pulmonary disease, traumatic injuries of the lungs and chest, pulmonary vascular diseases, disorders of the pleura and chest wall, and other pulmonary topics.

Corequisite(s): RTH 110, RTH 112, RTH 121, RTH 121LB

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 162 Principles of Mechanical Ventilation**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the concepts of mechanical ventilation for the adult patient. Includes establishing the need for mechanical ventilation, non-invasive versus invasive mechanical ventilation, the physiologic basis of ventilatory support, physical principles of positive pressure ventilation, physical assessment of the critically ill patient, interpreting basic waveform graphics, and respiratory monitoring in the intensive care unit.

Prerequisite(s): RTH 110, 112, 121, 121LB, and 156.

Corequisite(s): RTH 123, RTH 123LB, RTH 124

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 241 Application of Mechanical Ventilation**3 cr. hrs. 3 periods (3 lec.)**

Continuation of RTH 162. Study of the management of mechanical ventilation in the adult patient. Includes airway management, mechanical ventilation waveform graphics, selected adult mechanical ventilators and troubleshooting, care of the mechanically ventilated patient, alternative modes of mechanical ventilation, and home mechanical ventilation.

Prerequisite(s): HCA 152 and RTH 135LC.

Corequisite(s): RTH 241LB, RTH 243, RTH 243LB, RTH 245LC

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 241LB Application of Mechanical Ventilation Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of RTH 241. Study of the management of mechanical ventilation in the adult patient. Includes airway management, mechanical ventilation waveform graphics, selected adult mechanical ventilators and troubleshooting, care of the mechanically ventilated patient, alternative modes of mechanical ventilation, and home mechanical ventilation.

Prerequisite(s): HCA 152 and RTH 135LC.

Corequisite(s): RTH 241, RTH 243, RTH 243LB, RTH 245LC

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain content of the Respiratory Care department before enrolling in this course.

RTH 243 Advanced Assessment and Monitoring**3 cr. hrs. 3 periods (3 lec.)**

Study of the assessment of the critical respiratory patient. Includes cardiac output assessment, invasive hemodynamic monitoring, assessment of sleep-related breathing disorders, nutritional assessment and the respiratory system, advanced cardiac arrhythmia interpretation, cardiac stress testing, and bronchoscopy.

Prerequisite(s): HCA 152 and RTH 135LC.

Corequisite(s): RTH 241, RTH 241LB, RTH 243LB, RTH 245LC

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 243LB Advanced Assessment and Monitoring Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of RTH 243. Study of the assessment of the critical respiratory patient. Includes cardiac output assessment, invasive hemodynamic monitoring, assessment of sleep-related breathing disorders, nutritional assessment and the respiratory system, advanced cardiac arrhythmia interpretation, cardiac stress testing, and bronchoscopy.

Prerequisite(s): HCA 152 and RTH 135LC.

Corequisite(s): RTH 241, RTH 241LB, RTH 243, RTH 245LC

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 245LC Clinical Procedures II**4 cr. hrs. 16 periods (16 lab)**

This is the clinical portion of RTH 245 and continuation of RTH 135LC. Includes clinical assessment of the critical care patient, advanced airway management, advanced respiratory assessment monitoring, adult mechanical ventilation, transport of the critically ill patient, and care decisions in mechanically ventilated adult patients. Also includes hemodynamic assessment of the critically ill patient, observation in various respiratory care delivery environments, interaction with medical director, and case study presentation.

Prerequisite(s): HCA 152 and RTH 135LC.

Corequisite(s): RTH 241, RTH 241LB, RTH 243, RTH 243LB

Information: Students must be currently admitted to the Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 251 Neonatal and Pediatric Specialty Therapeutics**4 cr. hrs. 4 periods (4 lec.)**

Study of respiratory therapies used in specialized environments. Includes American Heart Association Pediatric Advanced Life Support (PALS) Training, care of the neonatal and pediatric patient, management of ventilation and oxygenation in the neonatal and pediatric patient, home care, and pulmonary rehabilitation.

Prerequisite(s): RTH 241, 241LB, 243, 243LB and 245LC.

Corequisite(s): RTH 251LB, RTH 255LC, RTH 256, RTH 257LB

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. Students must have a current American Heart Association Basic Life Support (BLS) certification prior to enrollment in this class.

RTH 251LB Neonatal and Pediatric Specialty Therapeutics Lab**1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of RTH 251. Study of respiratory therapies used in specialized environments. Includes American Heart Association Pediatric Advanced Life Support (PALS) Training, care of the neonatal and pediatric patient, management of ventilation and oxygenation in the neonatal and pediatric patient, home care, and pulmonary rehabilitation.

Prerequisite(s): RTH 241, 241LB, 243, 243LB, and 245LC.

Corequisite(s): RTH 251, RTH 255LC, RTH 256, RTH 257LB

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. Students must have a current American Heart Association Basic Life Support (BLS) certification prior to enrollment in this class.

RTH 255LC Clinical Procedures III**4 cr. hrs. 16 periods (16 lab)**

This is the clinical portion and continuation of RTH 245. Includes clinical assessment, advanced airway management and advanced respiratory assessment monitoring of the neonatal/pediatric patient, mechanical ventilation and care decisions for the adult and neonatal/pediatric patient, observation and participation in various respiratory care delivery environments, and case study presentation preparation.

Prerequisite(s): RTH 241, 241LB, 243, 243LB, and 245LC.

Corequisite(s): RTH 251, RTH 251LB, RTH 256, RTH 257LB

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 256 Cardiopulmonary Diseases II**2 cr. hrs. 2 periods (2 lec.)**

Continuation of RTH 156. Includes assessment of the developing fetus and the neonate, cardiovascular disorders and congenital anomalies of the newborn, cardiopulmonary disorders of the newborn, and pediatric cardiopulmonary disorders.

Prerequisite(s): RTH 241, 241LB, 243, 243LB, and 245LC.

Corequisite(s): RTH 251, RTH 251LB, RTH 255LC, RTH 257LB

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

RTH 257LB Clinical Applications and Professional Development**1 cr. hrs. 4 periods (4 lab)**

Completion of clinical application projects and 50 hours of Service Learning. Includes preparation of resumes, review for and completion of computerized self-assessment exams for credentialing, and interaction with licensure and national credentialing organizations.

Prerequisite(s): RTH 241, 241LB, 243, 243LB, and 245LC.

Corequisite(s): RTH 251, RTH 251LB, RTH 255LC, RTH 256

Information: Students must be currently admitted to the PCC Respiratory Care program and obtain consent from the Respiratory Care department before enrolling in this course.

Science for Teachers

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SCT 280 Process of Science for Elementary Educators I**3 cr. hrs. 3 periods (3 lec.)**

Interdisciplinary, hands-on, inquiry-based science for elementary educators. Includes the nature of science, integrating science in the elementary school classroom, technology and society, matter and energy, the universe, structure of life and organism in their environment.

Prerequisite(s): BIO 105, MAT 141 or MAT 142, and one of the following: AST 101IN, AST 102IN; CHM 121IN, CHM 130IN, CHM 151IN; GEO 101, GEO 102; GLG 102IN; or PHY 121IN.

Information: Designed for elementary education majors. Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification. Does not meet AGEC requirements for science.

SCT 281 Process of Science for Elementary Educators II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of SCT 280. Includes integrating additional science in the elementary school classroom, human health, human society, applying science and technology, patterns and relationships, historical perspectives, and critical thinking processes.

Prerequisite(s): SCT 280.

Information: Designed for elementary education majors. Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification. Does not meet AGEC requirements for science.

Social Services

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SSE 110 Introduction to Social Welfare**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the social welfare system. Includes social welfare as an institution, development of the social work profession, generalist social work practices, poverty and public welfare, social and economic injustice, social problems and special populations, and community resources and directories.

Gen Ed: Meets AGEC - SBS; Meets CTE - SBS.

SSE 111 Group Work**3 cr. hrs. 3 periods (3 lec.)**

Examination of group dynamics using experiential learning. Includes goals, communication patterns, leadership, power and influence, decision-making, conflict resolution, controversy, creativity, problem solving, diversity, and personal growth within groups. Also includes application of concepts through observation, group exercises, and case studies.

SSE 121 Study of Substance Use Disorders**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the study of substance use disorders in the United States. Includes history of substance use and historical development of prohibitions, classification and effects of substances, diagnosis and assessment of substance use disorders, theories of addiction and treatment strategies, and funding sources for treatment programs. Also includes cross-cultural perspectives; co-occurring disorders and integrated treatment modalities; treatment interventions; special populations; ethical issues; and education, resources, and prevention.

SSE 123 Prevention of Substance Use Disorders**3 cr. hrs. 3 periods (3 lec.)**

Comprehensive review of approaches to prevention of substance use disorders. Includes principles of prevention; risk factors, protective factors, resilience; and systems-oriented and client-oriented prevention strategies. Also includes controversial prevention issues, client-oriented prevention programs and funding, the role of media and social marketing, law enforcement and regulatory agencies, special populations, prevention in the workplace, and program evaluation.

SSE 128 Introduction to Behavioral Health**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the behavioral health care system in southern Arizona. Includes providing excellent service, ethics and boundaries, engagement and clinical documentation, introduction to service planning and covered services, management of complex needs, and strength-based behavioral health general assessment training. Also includes demographic data set, court-ordered treatment, covered services, behavioral health enhanced assessment training, and clinical training standardized self-study modules.

SSE 160 Youth Services and Child Abuse**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the field of youth services as offered through voluntary youth organizations, social service and child welfare agencies, juvenile detention and correctional agencies and community health care agencies. Includes services for abused and neglected children, dependent and emancipated children, delinquent children, special needs youth, and practice issues and prevention in youth services. Covers a variety of topics including historical and cultural perspectives on child rearing; child development; family composition and dynamics; assessing and identifying important childhood risk factors and behaviors; short-term and long-term effects of adverse childhood experiences; and intervention and prevention techniques.

SSE 184 Introductory Ethics: A Social Services Perspective**3 cr. hrs. 3 periods (3 lec.)**

Exploratory introduction of ethics from an historical and multicultural perspective viewed through the lens of contemporary social issues and social services delivery systems.

SSE 204 Counseling in a Multicultural Setting**3 cr. hrs. 3 periods (3 lec.)**

Concepts, techniques, and skills in values, perceptions, attitudes, and behaviors emphasizing intercultural communication patterns within a counseling setting. Includes culture and counseling, profiles of Americans, profiles of special populations, differences, cultural elements in counseling, dynamic factors, common terminology, disparities in treatment, counseling, and counseling theories.

Recommendation: Completion of SSE 110 before enrolling in this course. Those students pursuing the Behavioral Health Certificate are highly recommended to complete BHS 132 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

SSE 205 Case Report Writing and Documentation**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the principles, concepts, techniques and necessary skills to create and maintain case report records. Includes case report writing elements, report writing considerations, report content, ethical and legal issues, current trends in behavioral health case report writing, and cultural competence.

SSE 210 Community Organization and Development**3 cr. hrs. 3 periods (3 lec.)**

An examination, principles, and techniques of community organizing to effect change in America. Includes current conditions, theoretical frameworks for action, community change and professional practice, knowing your community, people as a valuable resource, planning for action, resource development, targeted outreach, community development and coalition building, strategies for institutional change, and government structure and legislative lobbying.

Prerequisite(s): SSE 110.

SSE 211 Group Facilitation Techniques**3 cr. hrs. 3 periods (3 lec.)**

Application of advanced concepts in group dynamics. Includes skill development and preparation for group facilitation in the community through in-class experiential learning. Also includes community-group case studies, ethical standards, and multicultural issues.

Prerequisite(s): SSE 111.

SSE 220 Treatment of the Substance Use Disorders**3 cr. hrs. 3 periods (3 lec.)**

Principles and techniques of treating substance use disorders. Includes definition and dynamics of substance use disorders, treatment continuum, treatment models or modalities, treatment plans, case studies, withdrawal, value clarification, and integration of treatment and case management skills.

SSE 222 Political, Legal and Ethical Aspects of Substance Use**3 cr. hrs. 3 periods (3 lec.)**

Overview of substance use and the law. Includes historical and legal overview; ethics, standards, and ethical decision making; major drug legislation and court decisions, substances, major psychoactive drugs, the government and the criminal justice system, international drug trafficking, and U.S. law enforcement.

SSE 224 Substance Use Disorders Diverse & Special Needs Populations**3 cr. hrs. 3 periods (3 lec.)**

Examination of and focus on understanding racial and ethnic differences in the prevalence of substance use disorders. Includes culture and substance use disorders, ethnic and racial groups, profiles of special populations, differences, cultural elements and relationships, dynamic factors, common terminology, counseling, and counseling theories.

SSE 242 Crisis Intervention: Relationship & Family Violence**3 cr. hrs. 3 periods (3 lec.)**

Principles and practice of crisis intervention with a particular focus on relationship and family violence, including intimate partner abuse, sexual violence, child abuse and neglect, and elder abuse. Includes crisis intervention theory, skills of crisis intervention, handling specific types of crises, crises worker issues and challenges, legal considerations and law enforcement response, societal attitudes, beliefs and perceptions; cultural considerations and community response to crises.

SSE 281 Social Service Delivery Systems**3 cr. hrs. 3 periods (3 lec.)**

Study of the social service delivery system. Includes the profession of social work, social work roles, service delivery systems, special and diverse populations, and diversity issues related to service delivery.

Prerequisite(s): SSE 110 or concurrent enrollment.

Information: Requires 40 hours of classroom-mediated community agency contact.

SSE 285 Foundations of Social Work Practice**3 cr. hrs. 3 periods (3 lec.)**

Theoretical foundation and skill base for effective culturally competent communication and interviewing with individuals, families, small groups, and larger systems. Includes framework for multicultural understanding and social work practice, interpersonal communication in professional helping relationships, major helping and developmental theories, and personal and professional development.

Prerequisite(s): SSE 110

Recommendation: Completion of SSE 281 before enrolling in this course, or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

SSE 290 Youth Services Field Experience**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Supervised placement in a community youth-serving agency. Includes regular supervisory service with agency supervisors, orientation to agencies and organizations in the community, evaluation of student performance, site visits, assistance with resume writing, classroom seminars, and completion of written assignments and documentation.

Prerequisite(s): SSE 160 and 285 (or concurrent enrollment in SSE 285).

Information: This course requires 135 hours of supervised placement in a community youth-serving agency. May be taken two times for a maximum of eight credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

SSE 292 Social Services Field Experience**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Supervised placement in a community social service agency. Includes regular supervisory service with agency supervisors, orientation to agencies and organizations in the community, evaluation of student performance, site visits, assistance with resume writing, classroom seminars, and completion of written assignments and documentation.

Prerequisite(s): SSE 281 and 285 (or concurrent enrollment in SSE 285).

Information: This course requires 135 hours of supervised placement in a social service agency. Students pursuing the AAS Substance Use Disorders Specialty must complete the supervised placement in an agency addressing substance use disorders. May be taken two times for a maximum of eight credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Consent of instructor is required before enrolling in this course.

SSE 293 Community Health and Development Field Experience**4 cr. hrs. 10 periods (1 lec., 9 lab)**

Supervised placement in a community-based social service agency offering services focused on wellness programs or community health and development. Includes regular supervisory service with agency supervisors, orientation to agencies and organizations in the community, evaluation of student performance, site visits, assistance with resume writing, classroom seminars, and completion of written assignments and documentation.

Prerequisite(s): SSE 170.

Information: Consent of instructor is required before enrolling in this course. This course requires 135 hours of supervised placement in an agency focused on wellness programs or community health and development.

Sociology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SOC 101 Introduction to Sociology**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the basic concepts of sociology, sociological analysis and research. Includes social structure, status, social group, social control, social stratification, social class, gender, race, sexuality, ethnicity, aging, learning and physical challenges, family, religion, education, government, health, technology, corporations, terrorism, environmental sustainability, social movements and social change, mass society, and postmodernity. Also includes globalization within and across contemporary societies and cultures.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

SOC 110 Introduction to Cities and Global Society**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the study of the urban environment. Includes exploring the city, city form and city culture, urban diversity, and urban and global dilemmas and possible solutions. Also includes a special emphasis on understanding cities and the impact of globalization at community, national, and international levels.

Information: Same as GLS 110.

Gen Ed: Meets AGEC - SBS and G; Meets CTE - SBS and G.

SOC 120 Current Social Problems**3 cr. hrs. 3 periods (3 lec.)**

Analysis of the causes, effects, and solutions to current social problems. Includes the causes, effects, and the complexity of solutions to current social problems in behavioral variance, inequality, social institutions, and global issues.

Recommendation: Completion of SOC 101 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

SOC 127 Marriage and the Family**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the social functions of marriage and the family. Includes structures of marriages and families, relationships, marriage, and transformation of marriage.

SOC 130 Social World of Drugs**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the social aspects of the use and abuse of drugs in the United States. Includes evolution of drug use, pharmacology, social and medical aspects of drugs, the business of drugs, sociological explanations of drug use and abuse, and social issues, policy, and politics.

Recommendation: Completion of SOC 101 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

SOC 201 Race, Ethnicity, Minority Groups and Social Justice**3 cr. hrs. 3 periods (3 lec.)**

Social processes involved in the construction of difference. Includes race, ethnicity, minority groups, nationality, and social justice. Also includes the analysis of social, political, cultural, religious, economic and historical formations with special reference to current global trends, social conflict, and change.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

SOC 204 Gender Identities, Interactions and Relations**3 cr. hrs. 3 periods (3 lec.)**

Examination of the social structures and processes related to gender in society. Includes sex versus gender, theoretical perspectives, politics past and present, gender and the family, love and marriage, and masculinity. Also includes gender in the workplace, in the media, religion, and medicine, and global perspectives.

Gen Ed: Meets AGEC - SBS and C; Meets CTE - SBS and C.

SOC 215 Human Sexuality**3 cr. hrs. 3 periods (3 lec.)**

Examination of human sexual experience throughout the life cycle, viewed from sociological and psychological perspectives. Includes psychological, sociological, and cultural legacy of sexuality, biological foundations of sexuality, varieties of sexual behaviors, sexuality and the life cycle, sexual problems, and social issues.

Recommendation: Completion of one of the following before enrolling in this course: PSY 101 or SOC 101. REA 091 with a C or better (or assessment into REA 112). If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Same as PSY 215.

Gen Ed: Meets AGEC - SBS and C, G; Meets CTE - SBS and C, G.

SOC 296 Independent Study in Sociology**3 cr. hrs. 3 periods (3 lec.)**

Exploration of special interest areas. Includes sociological question(s), methodological research design, implementation of viable research, data analysis using sociological theories, and presentation of findings.

Information: Activities determined by conference between student and instructor related to content of this course. May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Solar Technologies

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SLR 101 Beginning Photovoltaic Installation**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to photovoltaic energy and photovoltaic (PV) system installation. Includes markets and applications, safety basics, electricity basics, energy efficient appliances, solar energy fundamentals, photovoltaic materials, module fundamentals, concentrators, system components, system sizing, electrical design, mechanical design, and performance analysis and troubleshooting.

Information: This course specifically provides preparation for the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Installer Certification exam.

SLR 102 Advanced Photovoltaic Installation**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of SLR 101. Includes advanced photovoltaic (PV) energy and system installation training. Also includes safety basics, stand-alone PV system sizing, grid-tied system sizing, National Electric Code (NEC) compliant wire sizing, grounding of PV systems, site analysis and array mounting, and PV system commissioning, troubleshooting, maintenance and performance evaluation.

Prerequisite(s): SLR 101.

Information: This course specifically provides preparation for the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Installer Advanced Certification exam.

SLR 130 Solar Hot Water Systems**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Introduction to solar thermal systems. Includes the types, maintenance, performance, controls, site selection considerations, performance estimating and testing. Also includes related mathematics, copper piping practices, soldering and brazing, basic heat transfer, and basic principles of hydronics.

Prerequisite(s): BCT 105 and 107.

Information: BCT 100, 112, and 115 substitute for BCT 105. BCT 111, 113, and 114 substitute for BCT 107.

Spanish

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SPA 085 Introductory Spanish**4 cr. hrs. 4 periods (4 lec.)**

Beginning Spanish for students with no previous formal study of the language. Includes correct pronunciation, basic grammar and conversation, and common communications such as informal greetings and numbers.

Information: This course is not for transfer, but helps prepare students for success in transferable courses.

SPA 101 Elementary Spanish I**4 cr. hrs. 4 periods (4 lec.)**

Introduction to Spanish. Includes basic listening, reading, and writing skills and cultural and geographic awareness.

Prerequisite(s): Required score on Spanish assessment test.

Gen Ed: Meets AGEC - OTHER; Meets CTE - A&H.

SPA 101HN Elementary Spanish I: Honors**4 cr. hrs. 4 periods (4 lec.)**

Introduction to Spanish. Includes basic speaking, listening, reading and writing and cultural and geographical awareness. Also includes additional Honors content.

Information: Must qualify for Honors program. SPA 101HN will fulfill any SPA 101 requirement. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - OTHER; Meets CTE - A&H.

SPA 102 Elementary Spanish II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 101. Includes further development of oral and written forms, additional grammatical structures, interpersonal transactions, and geographical and cultural differences. Also includes an emphasis on balancing more complex structures with active communication.

Prerequisite(s): SPA 101 or required score on Spanish assessment test.

Information: Prerequisite(s) may be waived with one year of high school Spanish. See an instructor, advisor, or counselor.

Gen Ed: Meets AGEC - OTHER; Meets CTE - A&H.

SPA 102HN Elementary Spanish II: Honors**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 101. Includes further development of oral and written forms, additional grammatical structures, interpersonal transactions, and geographical and cultural differences. Also includes an emphasis on balancing more complex structures with active communication. Also includes additional Honors content.

Prerequisite(s): SPA 101 or required score on Spanish assessment test.

Information: Must qualify for Honors program. SPA 102HN will fulfill any SPA 102 requirement. Prerequisites may be waived with one year of high school Spanish. See an instructor, advisor, or counselor. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - OTHER; Meets CTE - A&H.

SPA 103 Beginning Spanish for Heritage and Bilingual Learners**4 cr. hrs. 4 periods (4 lec.)**

Spanish for heritage and bilingual learners. Includes basic oral and written forms for heritage and bilingual learners, grammatical structures, cultural and stylistic elements, interpersonal transactions, and geographical and cultural awareness. Also includes an awareness of diversity of Spanish-speaking cultures.

Prerequisite(s): Required score on Spanish assessment test.

Information: Ability to speak basic Spanish is required.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 201 Intermediate Spanish I**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 102. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and using a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking and listening.

Prerequisite(s): SPA 102 or required score on Spanish assessment test.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 201HN Intermediate Spanish I: Honors**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 102. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking and listening. Also includes additional Honors content.

Prerequisite(s): SPA 102 or required score on Spanish assessment test.

Information: Must qualify for Honors program. SPA 201HN will fulfill any SPA 201 requirement. Faculty or Advisor approval may be required before enrolling in this course. Instructor or advisor/counselor approval may be required before registering for this course. Honors content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 202 Intermediate Spanish II**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 201. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking, and listening. Also includes reading selections from authentic media, advanced conversation and discussions, and compositions using intermediate grammar structures.

Prerequisite(s): SPA 201 or required score on Spanish assessment test.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 202HN Intermediate Spanish II: Honors**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 201. Includes intermediate grammar structures and vocabulary contexts in oral and written forms and use of a variety of materials in the target language and cultures to promote proficiency in reading, writing, speaking, and listening. Also includes reading selections from authentic media, advanced conversation and discussions, and compositions using intermediate grammar structures. Also includes additional Honors content.

Prerequisite(s): SPA 201 or required score on Spanish assessment test.

Information: Must qualify for Honors program. SPA 202HN will fulfill any SPA 202 requirement. Faculty or Advisor approval may be required before enrolling in this course. Instructor or advisor/counselor approval may be required before registering for this course. Honors content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 203 Writing & Oral Skills for Heritage & Bilingual Learners**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 103. Includes further development of oral and written forms for heritage and bilingual learners, additional grammatical structures, cultural and stylistic elements, interpersonal transactions, and geographical and cultural differences. Also includes a continued awareness of the diversity of Spanish.

Prerequisite(s): SPA 103 or required score on Spanish assessment test.

Information: Ability to speak Spanish is required.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 251 Intermediate Spanish III**3 cr. hrs. 3 periods (3 lec.)**

Intensive writing and speaking in Spanish for second language learners of Spanish. Includes intermediate oral communication, complex reading communication, intermediate written communication, and themes in popular and traditional cultures.

Prerequisite(s): SPA 202 or required score on Spanish assessment test.

SPA 253 Intermediate Spanish for Heritage and Bilingual Learners**4 cr. hrs. 4 periods (4 lec.)**

Intensive writing and speaking in Spanish for heritage and bilingual learners. Includes intermediate oral communication, complex reading communication, intermediate written communication, and themes in popular and traditional cultures.

Prerequisite(s): SPA 203 or required score on Spanish assessment test.

Information: Ability to speak, read, and write Spanish is required.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 254 Interm Grammar/Writing for Span Heritage/Bilingual Learners**4 cr. hrs. 4 periods (4 lec.)**

Continuation of SPA 253. Includes intensive grammar and writing for heritage and bilingual learners within a dynamic cultural context. Includes complex intermediate oral communication, intermediate grammar and writing communication, exploration of diversity of culture and customs, and themes in literature.

Prerequisite(s): SPA 203 or required score on Spanish assessment test.

Information: Prerequisites may be waived with ability to speak, read, and write Spanish.

Gen Ed: Meets AGEC - OTHER and G; Meets CTE A&H and G.

SPA 296 Independent Study in Spanish**1-4 cr. hrs. 1-4 periods (1-4 lec.)**

Independent Spanish readings or other projects under the supervision of an instructor.

Information: Consent of instructor is required before enrolling in this course. **Information:** May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Special Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

EDS 290 Internship**8 cr. hrs. 40 periods (40 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post-Degree Teacher Certification Program and TPP Internship and Education Department approval prior to registration. EDS 290A, 290B, 290C, and 290D together constitute EDS 290.

EDS 290A Internship I**2 cr. hrs. 10 periods (10 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post-Degree Teacher Certification Program and TPP Internship and Education Department approval prior to registration. EDS 290A, 290B, 290C, and 290D together constitute EDS 290.

EDS 290B Internship II**2 cr. hrs. 10 periods (10 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education Department approval prior to registration. EDS 290A, 290B, 290C, and 290D together constitute EDS 290.

EDS 290C Internship III**2 cr. hrs. 10 periods (10 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education Department approval prior to registration. EDS 290A, 290B, 290C, and 290D together constitute EDS 290.

EDS 290D Internship IV**2 cr. hrs. 10 periods (10 lab)**

Overview of the student teaching experience, Teacher Preparation Program (TPP) Internship. Includes initial discussion, observation, assessing the learning environments, evaluating educational resources, long and short-term planning, mid-term evaluation, curriculum development and implementation and accommodation to individual needs. Also includes assessments, parent and community collaboration, portfolio, teamwork, and professional development and evaluation.

Information: This course requires admission to the Post Degree Teacher Certification Program and TPP Internship and Education Department approval prior to registration. EDS 290A, 290B, 290C, and 290D together constitute EDS 290.

Student Success

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

STU 100 College Success and Career Planning**1 cr. hrs. 1 periods (1 lec.)**

Theoretical models of cognition, motivation, and human development serve as the conceptual basis for the introduction of academic and career development strategies. Includes an introduction to the factors that impact learning, goal persistence, self-efficacy, and communication, which will foster the integration of relevant knowledge and skills. Also includes the use of assessment instruments (e.g., learning and career inventories) to identify students' strengths and challenges, and the application of skills to their academic and career development processes.

Information: This course is intended for students who are generally decided about their major and/or career path.

STU 102 Personal Finance**1 cr. hrs. 1 periods (1 lec.)**

Examination of financial practices students can use to build a strong financial foundation for their future. Includes budgeting, examining expenses, increasing income, minimizing college and other sources of debt, and exploring investment and insurance fundamentals. Also includes making informed personal finance decisions that lead to greater financial independence and increased personal success throughout life.

STU 105 Math Success Skills**1 cr. hrs. 1 periods (1 lec.)**

Confidence and skills to successfully master math classes. Includes personal learning styles, identifying math degree requirements and designing the course sequences necessary for graduation. Also includes strategies to reduce anxiety with math and test taking.

*Corequisite(s):*ICS 081

STU 106 Choosing a Major and College Success**1 cr. hrs. 1 periods (1 lec.)**

Theoretical models of career development, motivation, and cognition serve as the conceptual basis for the introduction of career and college success strategies. Includes an introduction to factors that impact career choices, decision-making, critical thinking, and learning, which will foster the application of knowledge and skills in academics and career development. Also includes the use of career inventories to identify areas of fit and interest, and to integrate this information into the decision-making process.

Information: This course is intended for students who are undecided or uncertain about their major and/or career path.

STU 107 University Transfer Exploration, Preparation and College**1 cr. hrs. 1 periods (1 lec.)**

Success Exploration of transfer, career, and college success strategies for first-year PCC students. Includes an introduction to the factors that impact choice of transfer major and related career(s), critical thinking and learning, financial planning, and the factors that foster academic success, motivation, and university degree attainment. Also includes synthesis of information from inventories and resources, and application of information to planning and decision-making processes.

Information: This course is intended for students who plan to transfer to a university and are generally undecided about their major.

STU 109 Making Career Choices**2 cr. hrs. 2 periods (2 lec.)**

Development of skills and knowledge necessary to make a career selection. Includes career exploration and self-assessments, choosing an occupational area or specific career, and researching potential career opportunities. Also includes degrees and programs of study, goal setting, and job seeking skills.

Information: STU 109 is a 2 credit hour version of STU 106 that expands the career exploration process to include skills and strategies necessary to secure employment in the future.

STU 121 Adult College Re-entry Skills**3 cr. hrs. 3 periods (3 lec.)**

Enhance academic, professional, and personal skills to maximize learning and success as an adult college student. Includes career exploration; self-assessments; development and enhancement of employability skills; college success skills; college and community resources; and personal, academic, and financial goals. Also includes confidence building, diversity awareness, and enhancement of communication skills.

Recommendation: Completion of REA 081 before enrolling in this course or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

STU 150 Becoming a Master Student**3 cr. hrs. 3 periods (3 lec.)**

Enhance academic, professional, and personal skills to maximize learning and success at the college level. Includes critical thinking skills, learning styles, college and/or career goals, study and interpersonal skills. Also includes examination of values, human diversity and perspectives, as they relate to academic and personal success.

Recommendation: Completion of REA 091 and WRT 090 before enrolling in this course or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

STU 200 Becoming a Critical Thinker**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the development and application of critical thinking strategies. Includes fundamentals of critical thinking and application of thinking skills to everyday issues. Also includes exploration of the following topics: bias, perception, and beliefs; critical questioning; reporting, inferring and judging; argumentation; language and thought; creativity and critical thinking; and critical thinking about the media.

Recommendation: Completion of REA 091 before enrolling in this course or concurrent enrollment. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

STU 210 Transfer Strategies**2 cr. hrs. 2 periods (2 lec.)**

Exploration of the application process for transitioning to a college or university. Includes financial aid, registration requirements for the upcoming semester, and the development of a transfer plan that supports individual academic and career goals.

Information: This class requires students to meet at the University of Arizona on specific days and participate in campus adventures. **Recommendation:** Consult with a counselor or advisor prior to enrolling in this course. Completion or near completion of the AGEC-A, B, or S is highly recommended.

STU 210UA University of Arizona Transition**2 cr. hrs. 2 periods (2 lec.)**

One of two courses that serves as the capstone experience for several degree programs and addresses transfer to the University of Arizona. Includes a focus on exploration of the process for students in their final year at PCC who are transferring to the University of Arizona and how their overall College experience and learning can be applied to their future education, everyday life, and lifelong learning. Also includes development of a transfer plan that supports individual academic and career goals, financial aid, registration requirements, and participation in University of Arizona campus tours and presentations.

Recommendation: Consult with a counselor or advisor prior to enrolling in this course. Completion or near completion of the AGEC-A, B, or S is required.

Information: This class requires students to meet at the University of Arizona on specific days. Students not planning on attending the University of Arizona should take STU210UT.

STU 210UT University Transition**2 cr. hrs. 2 periods (2 lec.)**

One of two courses that serves as the capstone experience for several degree programs and addresses transfer to any University, excluding the University of Arizona. Includes exploration of the process for students in their final year at PCC who may transfer to any University and how their overall College experience and learning can be applied to their future education, everyday life, and lifelong learning. Also includes development of a transfer plan that supports individual academic and career goals; completion of the application process for Arizona State University, Northern Arizona University, and/or other in-state and out-of-state colleges and universities; and financial aid and registration requirements.

Recommendation: Consult with a counselor or advisor prior to enrolling in this course. Completion or near completion of the AGEC-A, B, or S is required.

Information: This class requires students to participate in virtual or in-person campus tours and/or explore campus resources. Students interested in the University of Arizona should take STU210UA.

STU 230 Dynamics of Leadership**3 cr. hrs. 3 periods (3 lec.)**

Overview of the theoretical and applied foundations of leadership. The theoretical component includes the historical and contemporary theories and models of leadership, effective followership, multiculturalism, and ethics. The applied component includes the importance and use of vision and mission, inclusive leadership practices, responding to change, developing a personal philosophy of leadership, and creating a personal profile of strengths and assets. Communication and facilitation skills will be practiced with the completion of a leadership project.

Information: Same as MGT 230.

Surgical Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SGT 101 Introduction to Healthcare**1 cr. hrs. 1 periods (1 lec.)**

Introduction to the hospital environment and the history of surgery, as it applies to the health care setting. Includes an introduction to legal, ethical, and accountability issues in a health care setting. Also includes personal responsibilities, professional responsibilities, and environmental and work place safety.

SGT 150LB Surgical Lab Procedures I**4 cr. hrs. 12 periods (12 lab)**

Classroom presentations and laboratory demonstrations of surgical procedures. Includes a review of anatomy and related pathophysiology, an introduction to the operating room using mock lab procedures, and an introduction to pediatric and adult surgery. Includes basic ear, nose, throat, and OB/GYN procedures based on current industry standards. Also includes work in the laboratory performing set-ups, practicing procedures, and learning standards of teamwork and organization.

Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TEC 100 Introduction and Overview of Electronics**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Examination of the principles and techniques of basic electrical concepts. Includes fundamentals of electricity, current, voltage, resistance, Ohm's Law, electrical measurements, meters, power, DC circuits, magnetism, inductance, capacitance, alternating current, transformers, and AC circuits. Also includes the language of electronics and the mathematical foundations relative to the electronics industry.

TEC 101 Physics for Technology**3 cr. hrs. 3 periods (3 lec.)**

Fundamentals of applied physics for technology. Includes matter, motion, forces, work and energy, fluids, temperature and heat, wave motion, electricity, direct current electricity, magnetism, alternating current, electronic devices, and light.

Prerequisite(s): MAT 095 or 097 or 122 or 122Z or 123 or TEC 111.

Corequisite(s)

TEC 103 Light and Optical Systems**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Introduction to light and optical systems used in photolithographic processes and equipment in semiconductor manufacturing. Includes the electromagnetic spectrum, basic principles of light, light sources, interaction between matter and light, optics terminology, and standing waves. Also includes filters, microscopes, photolithography, and optical fibers.

Prerequisite(s): TEC 113.

TEC 105 Electronic Assembly Tools**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduces hand tools and measuring devices used in electronics and electromechanical assemblies. Includes basic and special assembly tools; fastener installation and removal tools; precision measuring tools; fabrication tools; and torque and optical measuring instruments. Also includes an emphasis on required safety procedures and practices and the use of selected tools, measuring devices, and procedures.

TEC 111 Applied Math I**2 cr. hrs. 2 periods (2 lec.)**

Introduction to numerical operations in measurement and systems of units. Includes geometric figures, waveshapes, scale drawings, collection of data, display of data, and data calculations. Also includes basic algebraic and numeric expressions, scientific notation, and instruction on using the handheld calculator.

TEC 112 Applied Math II**2 cr. hrs. 2 periods (2 lec.)**

Continuation of TEC 111. Includes graphing, linear equations, functional notation, quadratic equations, and solving systems of linear equations. Also includes many examples and exercises pertaining to electrical, magnetic, fluidic, thermal, and mechanical systems; and layout and analysis of resistor, diode, and transistor circuits using a circuit simulation program.

Prerequisite(s): TEC 111.

TEC 113 Problem Solving for Electronics and Optics**3 cr. hrs. 3 periods (3 lec.)**

Problem solving for electronics and optics. Includes exponents and radicals, logarithmic and exponential functions, application of equations, resistive-capacitive and resistive-inductive transient behavior, trigonometric considerations, circular functions, vectors and phasors, mathematics of phasors, alternative current and circuits, and sinusoidal alternating current. Also includes coordinate systems, the conic sections, trigonometric identities, complex exponentials, Euler's formula, and examples in optics.

Prerequisite(s): MAT 095 or 097 TEC 112 or required score on the mathematics assessment test.

TEC 117 Optical Assembly Techniques**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Fundamental procedures used during the assembly of optical equipment. Includes vibration isolation, epoxy and curing, mounting optics, alignment aids, assembly and disassembly techniques, fasteners, and materials. Also includes thermal considerations, vibration mounting of components, baffles, hermetic sealing, and metal finishing.

Recommendation: Completion of TEC 116 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

TEC 121 Basic Electric and Magnetic Properties**3 cr. hrs. 3 periods (3 lec.)**

Introduction to AC, DC, and magnetic circuit theory. Includes passive devices, terminology, basic laws, network calculations, electrical measurements, instruments, and units. Also includes use of hand tools, safety, use of schematic and block diagrams, troubleshooting, and electronic circuit applications.

Prerequisite(s): TEC 100 and 111.

Corequisite(s): TEC 121LB

TEC 121LB Basic Electric and Magnetic Properties Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 121.

Prerequisite(s): TEC 100 and 111.

Corequisite(s): TEC 121

TEC 122 Applied Semiconductor Devices**3 cr. hrs. 3 periods (3 lec.)**

Basic semiconductor theory and applications. Includes measurement, component selection, effects of the environment on components, component protection, and applications. Also includes diodes, transistors, integrated circuits with operational amplifiers, and regulated power supplies.

Prerequisite(s): TEC 113 and 121.

Corequisite(s): TEC 122LB

TEC 122LB Applied Semiconductor Devices Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 122.

Prerequisite(s): TEC 113 and 121.

Corequisite(s): TEC 122

TEC 123 Digital Circuits and Computers**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the theory, operation, and application of digital components used in combinational and sequential logic. Includes number systems; Boolean algebra; gates and invertors; digital measurements and test equipment; memory; error detection; convertors; programmable logic arrays; microprocessor basics; and technical information.

Corequisite(s): TEC 123LB

TEC 123LB Digital Circuits and Computers Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 123.

Corequisite(s): TEC 123

TEC 125 AC Networks with Phasors**3 cr. hrs. 3 periods (3 lec.)**

Applications of trigonometry and the algebra of complex numbers to AC circuits safety, troubleshooting, analysis, measurement, and design. Includes phasors, transfer functions, three phase power, filters, concepts of Fourier analysis, impedance matching, RLC circuits, waveshaping, and transmission lines at high AC frequencies.

Prerequisite(s): TEC 113 and 121.

Corequisite(s): TEC 125LB

TEC 125LB AC Networks with Phasors Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 125.

Corequisite(s): TEC 125

TEC 126 Electronics Construction and Assembly**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Basic skills in construction and assembly of electronic equipment. Includes soldering through-hole and surface mount components; reading and interpreting internal electronic wiring schematics; and mechanical assembly diagrams. Also includes performing printed circuit board construction; wiring and cabling construction; terminations; and chassis construction.

Prerequisite(s): TEC 100, 105, and 111.

TEC 127 Printed Circuit Board Solder Assembly**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Advanced skills for assembly of electronic equipment. Includes wire and terminals connections; through-hole and surface mount soldering of components; printed circuit board requirements; coatings and encapsulations; and rework, repair and inspection methodology. Also included IPC standards to prepare student for IPC J-STD-001 Certification by exam.

Prerequisite(s): TEC 100, 105 and 111.

Corequisite(s): TEC 126

TEC 128 Electronic Measurements**2 cr. hrs. 2 periods (2 lec.)**

Techniques to perform measurements on passive and active component circuits. Includes measurement standards; types of meters; parameters of passive and active devices; harmonic and inter-modulation distortion; radio frequency modulation; operation and measurements of the oscilloscope; and the distortion analyzer.

Prerequisite(s): TEC 122 and 125.

Corequisite(s): TEC 128LB

TEC 128LB Electronic Measurements Lab**1 cr. hrs. 2 periods (2 lab)**

This is the Lab portion of TEC 128.

Corequisite(s): TEC 128

TEC 130 Computer Assembly and Testing**3 cr. hrs. 3 periods (3 lec.)**

Computer system assembly, set-up, and start-up. Includes computer systems overview, safety precautions, support equipment, operating systems, system assembly, system start-up, troubleshooting, and peripheral connections.

Corequisite(s): TEC 130LB

TEC 130LB Computer Assembly and Testing Lab**1 cr. hrs. 2 periods (2 lab)**

This is the Lab portion of TEC 130.

Corequisite(s): TEC 130

TEC 132 Computer Systems Servicing**3 cr. hrs. 3 periods (3 lec.)**

Advanced computers servicing and peripherals installation. Includes an introduction to computer servicing, laser and ink-jet printers, troubleshooting of printers, safety and troubleshooting of monitors, floppy disk drives, hard disk drives/optical drives, operating systems, application programs, and network basics.

Prerequisite(s): TEC 130.

Corequisite(s): TEC 132LB

TEC 132LB Computer Systems Servicing Lab**1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 132.

Corequisite(s): TEC 132**TEC 160 Microcomputers and Programming Techniques****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to microcomputer operation. Includes overview and history of the microcomputer, applications, terminology and specifications, software/programming, operating systems, disk operations, programming in BASIC, and introduction to Assembly Language.

Prerequisite(s): MAT 092 or TEC 111.*Information:* Prerequisite maybe waived with consent of instructor.**TEC 221 Linear Devices****3 cr. hrs. 5 periods (2 lec., 3 lab)**

Linear devices in electronic systems. Includes overview of linear integrated circuits, the ideal operational amplifier, real operational amplifier parameters, selected linear and non-linear applications and transfer functions, phase lock loops, voltage reference circuits, and voltage regulators. Also includes optoelectronic devices, power supply bypassing, convertors, other selected linear devices, and testing and troubleshooting.

Prerequisite(s): TEC 122 and 125.**TEC 222 Electromechanical Devices and Systems****3 cr. hrs. 3 periods (3 lec.)**

Prime movers encompassing DC motors, AC motors, synchros, stepper motors, and fluid motors. Includes control systems and the utilization of electronic devices in electromechanical control. Also includes mechanical components of electromechanical systems, electronic components used in motor control systems, sensors, transducers, relays, and solenoids.

Prerequisite(s): TEC 221.*Corequisite(s):* TEC 222LB**TEC 222LB Electromechanical Devices and Systems Lab****1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 222.

Corequisite(s): TEC 222**TEC 225 Fluid Devices and Automated Systems****2 cr. hrs. 2 periods (2 lec.)**

Application and control of fluid devices using programmable logic devices. Includes microprocessors, software, ladder logic and diagrams, programmable logic controllers (PLCs), and variety of input/output devices used in the automated manufacturing and test environments. Also includes safety and basic physical principles or laws governing the operation of pneumatic and hydraulic devices.

Prerequisite(s): TEC 101, 123 and 222.*Corequisite(s):* TEC 225LB**TEC 225LB Fluid Devices and Automated Systems Lab****1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 225.

Corequisite(s): TEC 225**TEC 228 RF and Microwave Devices****3 cr. hrs. 3 periods (3 lec.)**

Introduction to electronic communication circuits and methodologies in transmitters and receivers. Includes history and trends in communications technology, the electromagnetic spectrum, resonant circuits, coupling, lumped filters, behavior of devices, amplifiers, receivers, transmitters, and signal sources. Also includes properties, applications, measurements, and specifications of electronic communications components, systems at RF and microwave frequencies, overview of RF components, waveguides, and antennas.

Prerequisite(s): TEC 221.*Corequisite(s):* TEC 228LB**TEC 228LB RF and Microwave Devices Lab****1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 228.

Corequisite(s): TEC 228

TEC 230 Peer-to-Peer Networking and Network Cabling Fundamentals**3 cr. hrs. 3 periods (3 lec.)**

Introduction to basic networking concepts and cabling standards. Includes the Open System Interconnection (OSI) model of networking, types of networking, multi-user vs. single-user programs, network security, type of connections, and type of cabling.

Prerequisite(s): TEC 132/132LB.*Corequisite(s):* TEC 230LB*Information:* Prerequisite may be waived with consent of instructor.**TEC 230LB Peer-To-Peer Networking and Network Cabling Fundamentals Lab****1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 230.

Corequisite(s): TEC 230**TEC 250 Digital Devices****3 cr. hrs. 3 periods (3 lec.)**

Digital integrated circuits, primarily TTL. Includes power requirements, propagation delay, input and output electrical characteristics, counters, latches, multiplexors, decoders, flip-flops and other digital devices. Also includes digital circuit troubleshooting.

Prerequisite(s): TEC 122 and 123.*Corequisite(s):* TEC 250LB**TEC 250LB Digital Devices Lab****1 cr. hrs. 3 periods (3 lab)**

This is the Lab portion of TEC 250.

Corequisite(s): TEC 250**TEC 251 Analog Circuits****3 cr. hrs. 3 periods (3 lec.)**

Advanced analog circuits which includes subtractors, differential summing amplifiers, instrumentation amplifiers, I-to-V converters, V-to-I converters, integrators, differentiators, active filters, oscillators, comparators, voltage limiters, window detectors, V-to-F converters, F-to-V converters, clippers, clampers, universal active filters, switched capacitor filters, 555 timer applications, phase-locked loops, power amplifiers, and voltage regulators.

Prerequisite(s): TEC 221*Corequisite(s):* TEC 251LB**TEC 251LB Analog Circuits Lab****1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of TEC 251. The student will do a capstone project in analog circuits.

Prerequisite(s): TEC 221*Corequisite(s):* TEC 251

Theater

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

THE 104 Voice and Movement for the Actor**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Principles and practice of voice and movement skills for the actor. Includes phonetics, physical isolation and awareness exercises, development and practice of stage dialects, and physicalization of characters.

Information: May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

THE 105 Theater Appreciation**3 cr. hrs. 3 periods (3 lec.)**

An exploration of the theory and practice of the discipline of theatre art. Includes setting the stage for understanding and appreciating theatre arts, the artists, and production of the play.

Prerequisite(s): WRT 090 or 101 or 102.

Information: Students are expected to attend and critique a minimum of one theatrical production. Students may, at the discretion of the instructor, receive additional credit for participation in a PCC theatre production when this participation is not part of the student's requirements for another class.

Gen Ed: Meets AGEC - FA and C; Meets CTE - A&H or SBS and C.

THE 110 Movement and Dance for Actors**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Physical dynamics of actor training. Includes relaxation and warm-up techniques, vocabulary for movement, use of movement in developing acting skills, and improvisation for scenes and text analysis. Also includes execution of basic dance and movement, history of dance and movement for musical theater, and exercises.

THE 111 Stagecraft**3 cr. hrs. 3 periods (3 lec.)**

Principles and the practical application to the operation and techniques of various types of stages and stage scenery. Includes theater organization, geography, shop safety, tools and hardware applications, historic overview, construction design, three-dimensional scenery, and properties research. Also includes acquisition, maintenance, costume design, stage rigging systems, stage lighting, paint, materials handling, measuring, construction, assembly, finishing, rigging, and painting techniques.

Corequisite(s): THE 113

THE 113 Stagecraft Crew**1 cr. hrs. 3 periods (3 lab)**

Preparing, organizing, setting up, running, and shifting of theatrical sets, properties, and costumes for approved theatrical productions. Includes scenic cost estimates and budget, construction, planning and execution, production deadlines, property acquisition, and props construction. Also includes painting and finishing, stage lighting, scenery shifting; and property organization, distribution, and security.

Corequisite(s): THE 111

THE 118 Basic Theater Graphics**3 cr. hrs. 3 periods (3 lec.)**

Principles and practice of graphic skills necessary in the planning of theatrical productions. Includes techniques of pencil sketching, study of theatrical drafting conventions, techniques of mechanical drawing, study of mechanical perspective, digital color rendering techniques, study of color theories, and study of computer design applications for theatrical drafting.

THE 121 Introduction to Theater Design**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Introduces the role of scenic, costume, lighting, and sound design in the theater. Includes costume history, elements and purpose; scenic, sound, and lighting elements and historical context; and design processes and techniques.

THE 125 Theater Production**2 cr. hrs. 6 periods (6 lab)**

The practical application of exploratory learning within an ensemble setting. Includes the relating of ideas and possibilities to practical methods, skills and structure of Theatrical Production.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of four credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

THE 140 History of Theater to the 18th Century**3 cr. hrs. 3 periods (3 lec.)**

Survey of theater, drama and audiences from their origins to the late 18th century. Includes an examination of theatrical architecture, scenic/costume design, acting styles, tragic/comic theories, audience, and literature.

Gen Ed: Meets AGEC - HUM; Meets - CTE - A&H.

THE 149 Introduction to Acting I**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to performance techniques and the development of physical skills for effective performance. Includes theatrical codes of behavior, exercise and structured improvisations, control of emotions and body, verbal and non-verbal intentions, emotional recall techniques and exercises, concentration and centering exercises, and physical investment exercises. Also includes physical projection of emotional states, imagery, auditioning, critiques of two productions, maintaining spontaneity, critiques of two productions, maintaining spontaneity, character analysis, playing a character, and monologues and scenes.

THE 151 Introduction to Acting II**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of THE 149. Includes advanced theatre game and improvisations, introduction to status and its application, rehearsal conferences, scene presentations, character creation, and language plays.

Prerequisite(s): THE 149.

THE 210 Screen Acting**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Introduction to film and television acting techniques. Includes special technical aspects of acting before a camera, performance preparation, and conduct of performance.

THE 220 Stage Lighting**3 cr. hrs. 3 periods (3 lec.)**

Principles of stage lighting design and practice. Includes historical context, electricity and lamps, fixtures, dimming equipment, control equipment, color media use and handling, design techniques, special effects and set up, and safety procedures. Also includes care, maintenance, proper use of lighting equipment, organization of lighting work, and operation.

Corequisite(s): THE 222

THE 222 Stage Lighting Crew**1 cr. hrs. 3 periods (3 lab)**

Organizing, setting up and operating of stage lighting for approved theatrical productions. Includes analysis of designer information, cost estimates and budgeting, planning and execution of operations, and control board techniques for rehearsals and performances.

Corequisite(s): THE 220

THE 245 Principles of Dramatic Structure**3 cr. hrs. 3 periods (3 lec.)**

Examination and analysis of the structural elements of major dramatic genres. Includes reading the play, stage directions, characters and personages, plot and diction, the actor's body, and the play within context.

THE 250 Acting: Audition for Theater**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Acting: Auditioning for Theater Theory and practice of creating sustained character portrayals through the performance of a series of monologues chosen from a broad spectrum of both classical and contemporary theatrical literature. Includes auditioning basics and resume fundamentals, prepared audition scenes in plays, and library and Internet research skills. Also includes contemporary monologue basics and performance, commercial auditioning, prepared audition scenes in film and television, Shakespeare monologue basics, auditioning, and performance of classical monologues.

Prerequisite(s): THE 149.

THE 251 Acting: Shakespeare and Classical Literature**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Performance-oriented class focuses on the practice and theory of pre-realistic styles of acting, and Shakespeare through the use of verse and prose. Includes the performance and analysis of Farce, Restoration Comedy, Shakespeare and presentation of a Sonnet.

Prerequisite(s): THE 149.

THE 296 Independent Studies in Theater**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Students work at various assigned tasks in theatrical settings under the guidance of an instructor. Includes the opportunity for the student to design his/her own project with the instructor's approval.

Information: Consent of instructor is required before enrolling in this course. May be taken two times for a maximum of eight credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Therapeutic Massage

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TMA 101 Introduction to Massage Therapy

2 cr. hrs. 2 periods (2 lec.)

Survey of massage therapy practice including history, overview of bodywork systems, benefits and indications of massage.

TMA 120 Professionalism and Ethics for Massage Therapists

2 cr. hrs. 2 periods (2 lec.)

Overview of the ethics and professionalism related to an effective, successful massage therapy/bodywork practice. Includes general ethical principles of practice and professional dress, conduct, boundaries and communication.

TMA 201IN Therapeutic Massage Practices I

6 cr. hrs. 9 periods (3 lec., 6 lab)

Principles of professionalism, ethics, and legalities. Includes use of terminology related to massage therapy; applications, indications, and contraindications of the nine strokes of Swedish massage; and study of the human osseous and muscular structure. Also includes emphasis on normal movement patterns, origins, insertions, and functions of the muscular system.

Prerequisite(s): With a grade of C or better or concurrent enrollment: TMA 101, 120, 210, WED 110 and 111.

TMA 202IN Therapeutic Massage Practices II

6 cr. hrs. 9 periods (3 lec., 6 lab)

Refined application of the nine strokes of Swedish massage and contraindications to avoid. Includes application of advanced principles and techniques of trigger point therapy, muscle energy technique, stretching, hydrotherapy protocols, hot and cold applications, reflexology, and corporate massage. Also includes study of the human osseous and muscular structure with emphasis on normal movement patterns and the origin, insertion, and function of the muscular system.

Prerequisite(s): TMA 201IN with a grade C or better.

Corequisite(s): TMA 202LC or concurrent enrollment.

Information: Course is restricted to students enrolled in the program.

TMA 202LC Therapeutic Massage Practice Clinical Lab I

1 cr. hrs. 3 periods (3 lab)

Students practice and perfect the application of fundamental Swedish Massage techniques in a supervised, supportive learning environment in an onsite clinical setting. Course reinforces massage theory and practice learned in TMA 201IN.

Corequisite(s): TMA 202IN

TMA 210 Fundamentals of Kinesiology

3 cr. hrs. 4 periods (2 lec., 2 lab)

A survey of the biology of movement. Includes a review of the skeletal and muscular systems, planes of movement and terms of anatomical reference; structure and function of joints; and origins, insertions and actions of muscles of the trunk and limbs. Also includes demonstration and analysis of normal and abnormal movement.

Prerequisite(s): BIO 160IN with a grade of C or better.

TMA 215 Introduction to Pathology for Massage and Bodywork

3 cr. hrs. 3 periods (3 lec.)

Introduces the student to basic disease processes and common pathologies associated with organ systems and provides an overview of pathology pertinent to massage therapy and bodywork. Includes cautions, contraindications and adaptive measures as applied to common pathologies of organ systems. Also includes the potential interactions between bodywork and medications.

Prerequisite(s): With a grade of C or better: BIO 160IN and TMA 101.

TMA 222 Business Management for Massage and Bodywork

2 cr. hrs. 2 periods (2 lec.)

Business management course designed specifically for massage therapy and bodywork practitioners. Includes business planning and development, financial management, marketing, and communications for these professional practices.

Prerequisite(s): With a grade of C or better, or concurrent enrollment: BIO 160IN, TMA 202IN, and 202LC.

Recommendation: Concurrent enrollment in TMA 290LC.

TMA 225 Massage in Health Care Settings**1.5 cr. hrs. 1.5 periods (1.5 lec.)**

Introduction to concepts, conditions, and unique elements of performing therapeutic massage in health care settings. Includes overview of common hospital policies, professionalism in the medical field, communication with health care providers, and sanitation and hygiene. Also includes an overview of appropriate massage techniques to employ on patients with specific medical conditions and diseases, impact of medications on massage patients, appropriate massage modifications for effects of medications, medical terminology and abbreviations, and case studies.

Information: Elective course for Licensed Massage Therapists (equivalent to 19.5 Continuing Education Hours or 1.95 CEUs.)

TMA 290LC Therapeutic Massage Clinical**3 cr. hrs. 8 periods (8 lab)**

Application and integration of fundamental and advanced massage techniques for various purposes and populations. Includes Swedish, Deep Tissue, Pain and Injury Management, Stretching, Range of Motion, Asian, Energy, and Hospital-Based massage therapies.

Prerequisite(s): With a grade of C or better: TMA 120, 202IN, 202LC, 210, 215, and 222. (Concurrent enrollment permitted in: TMA 202IN, 202LC, 215, 222.)

TMA 291 Therapeutic Massage Internship**1 cr. hrs. 5 periods (5 lab)**

Advancement and refinement of the knowledge, practice skills and professional abilities necessary for success in a therapeutic massage setting. Includes observing, assisting and participating in various duties and massage practices in an off-site, clinical therapeutic massage setting as appropriate and specific to the internship site. Also includes observation and application of business and professional skills.

Prerequisite(s): With a grade of C or better, or concurrent enrollment: BIO 160IN, TMA 222, and 290LC. May be taken three times for a maximum of three credit hours. If this course is repeated see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Students enrolling for the first time must take the course concurrently with TMA 290LC.

TMA 296 Therapeutic Massage Independent Study**1-3 cr. hrs. 2-6 periods (.5-1.5 lec., 1.5-4.5 lab)**

Opportunity to continue development as a massage therapist through the pursuit of a specific project or area of study in therapeutic massage. Content will be determined by instructor and student.

Information: Students must obtain faculty approval before enrolling in this course. Course content and performance objectives will be kept on file. May be taken three times for a maximum of three credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Translation & Interpretation

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TRS 101 Introduction to Translation and Interpretation**3 cr. hrs. 3 periods (3 lec.)**

Principles and procedures for acquisition of skills in interpretation and translation of written materials. Includes an introduction to translation and interpretation; translation and interpretation preparation, procedures, and specialties; and work of the translator and interpreter.

TRS 102 English and Spanish for Translation**4 cr. hrs. 4 periods (4 lec.)**

Analysis of the English and Spanish languages from the translator's point of view. Includes the structure of English and Spanish, cultural and stylistic components, and semantics. Also includes standard English mechanics, punctuation, and metaphorical and idiomatic expressions as well as an analysis of Spanish and the dialectal differences, interferences and lexical obstacles.

TRS 120IN Technology for Translation and Interpretation**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Survey of the technological equipment that facilitates the work of the translator. Includes computers for transcription/translation, information distribution techniques, file transfer technologies, using the World Wide Web in translation and interpretation, and applied projects.

Information: CSA 100 may be waived if computer applications experience is documented. See an instructor.

TRS 150 Survey of Translation Specialty Areas**4 cr. hrs. 4 periods (4 lec.)**

Introduction to the translation specialty areas of health care, legal, literary, and commercial/business. Includes introduction to specialty areas, types of documents, elements and characteristics of specialty documents, resource development, ethical and legal restrictions, and development of translation subskills.

TRS 160 Translation in Specialty Areas**4 cr. hrs. 4 periods (4 lec.)**

Principles and procedures for translating specialty area materials. Includes health care, legal, commercial/business, and literary translation exercises.

TRS 161 Medical Spanish and English Interpreting**3 cr. hrs. 3 periods (3 lec.)**

Bilingual interpreting in a medical context and setting. Includes professional responsibility and interpreter ethics, managing the interpreting encounter, healthcare terminology, the United States healthcare system, and communication through bilingual interpretations.

Information: This course assumes bilingual fluency in both English and Spanish. This course is designed and aligned with the purpose of preparing students to take the CCHI Certification exams and earn their CCHI certification.

TRS 162 Introduction to Legal Spanish/English Interpretation**3 cr. hrs. 3 periods (3 lec.)**

Interpreting in a legal context. Includes interpreting in a legal setting, knowledge of legal procedure and ancillary issues related to legal terminology in Spanish and English, bicultural legal communication, and regional differences.

Information: Requires Spanish/English language fluency.

TRS 202 Interpretation Techniques**3 cr. hrs. 3 periods (3 lec.)**

Specific theories and practices in interpreting oral communication from English to Spanish and Spanish to English. Includes theories of interpretation, techniques of interpretation, interpretation strategies, interpretation procedures, and modes of interpretation.

Prerequisite(s): TRS 101 or concurrent enrollment.

TRS 203 Consecutive Interpretation and Sight Translation**4 cr. hrs. 6 periods (3 lec., 3 lab)**

Essential modes of interpretation. Includes history and use, theory, interpreting skills development, sight translation skills, consecutive interpretation skills, and interpretation issues.

TRS 270 Simultaneous Interpretation**4 cr. hrs. 4 periods (4 lec.)**

Study and practice of simultaneous interpretation. Includes history and use, theory, interpreting skills development, simultaneous interpretation skills, and issues in simultaneous interpretation.

TRS 282 Advanced Project in Translation**4 cr. hrs. 5 periods (3 lec., 2 lab)**

Engaging in a specialty area advanced project to produce a translated product. Includes agency/individual sponsor, translation goals, translating written documents, on-site and/or supervised training, and preparation for exit competency evaluation.

Travel/Tourism Operations

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TVL 101 Introduction to the Travel Industry**3 cr. hrs. 3 periods (3 lec.)**

Major components of travel products and careers. Includes travel industry and hospitality products, distribution of the travel product, and careers in the travel industry.

TVL 102 Computerized Reservation Systems**3 cr. hrs. 5 periods (2 lec., 3 lab)**

Basic software training. Includes screen management, passenger name record (PNR), Sabre's FOX, PNR modifications, faring/pricing the completed PNR, booking and pricing hotels and rental cars.

TVL 103 Geography for the Tourism Professional**3 cr. hrs. 3 periods (3 lec.)**

Applied physical geography of popular global tourist destinations, major tourist attractions, popular history, and itineraries for specific destinations. Includes the opportunity to take the Travel Institute's Destination Specialist Certification Exam in the geographic area of choice.

TVL 109 Survey of Leisure Products**3 cr. hrs. 3 periods (3 lec.)**

Electronically research, sell, and book retail leisure travel components to include, but not limited to hotels, rental cars, rail travel, escorted and all-inclusive tours, and cruise accommodations. Includes an introduction to web-based marketing (blogs, Facebook, Instagram, and other web-based conduits for increasing sales) for tourism consultants who sell a variety of tourism products.

TVL 121 Tourism Sales and Marketing**3 cr. hrs. 3 periods (3 lec.)**

Concepts of selling techniques for the tourism professional. Includes phone and internet selling strategies as well as an introduction to listening skills, sales techniques, client behavior styles, closing the sale, legal aspects of the travel industry for inside, outside and home-base tourism professionals. Also includes concepts of tourism marketing and marketing techniques for the tourism professional, consumer behavior, strategies, and marketing elements.

TVL 211 Tour Direction and Tour Group Management**3 cr. hrs. 3 periods (3 lec.)**

Introduction to the basic principles of guiding tours. Includes principles of tour group handling, tour group planning, tour guide basics, tour guide narration, tour guide procedures and challenges, and public speaking for the tour guide.

TVL 296 Independent Study in Travel/Tourism**1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Independent studies projects or special interest areas in travel/tourism. Content to be determined jointly between student and instructor.

Information: May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate. Offered; Fall.

Truck Driver Training

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TDT 116 Basic Vehicle Operations-Coach/Transit Bus**3 cr. hrs. 3 periods (3 lec.)**

Information to prepare the trainees to pass the Commercial Driver License (CDL) exam and obtain a Class "B" permit with a "P" passenger endorsement. Includes CDL preparation, driving conditions, pre-trip inspection, air brakes, map reading, hours of service, backing, and transporting passengers.

Information: Admission to the Truck Driver Training Program is required prior to registration.

TDT 117 Basic Driving Maneuvers - Coach/Transit Bus**3 cr. hrs. 3.5 periods (2.5 lec., 1 lab)**

Techniques for the inspection and safe operation of a coach or transit bus. Includes pre-trip inspection, backing, basic control of left and right turns, progressive shifting, space and speed management, visual search and communication, defensive driving, and hazard perception.

Information: Admission to the Truck Driver Training Program is required prior to registration.

TDT 118 Basic Vehicle Operations and Commercial Driver's License Req**5 cr. hrs. 5 periods (5 lec.)**

Basic methods of safely operating a combination vehicle. Includes the operation of the air brake system, coupling and uncoupling a tractor and trailer, cargo handling including hazardous materials, proper method of conducting a pre-trip inspection, completion of braking maneuvers, and trip planning. Also includes familiarization of the United States Department of Transportation (USDOT) regulations, hours of driver service, and all Commercial Driver's License (CDL) requirements, managing a professional driver life, managing speed effectively, and road and weather condition response.

Information: Admission to the Truck Driver Training Program is required prior to registration.

TDT 119 Basic Driving Maneuvers-Class A CDL**3.5 cr. hrs. 4 periods (3 lec., 1 lab)**

Demonstration and skill development of basic maneuvers of driving a combination vehicle. Driving proficiency development including control, backing, visual search, shifting, turning, space and speed management, and hazard perception. Successful completion of this class should prepare trainee for Commercial Driver's License (CDL) skill examination.

Prerequisite(s): Completion of TDT 118 with a grade of C or better.

Information: Admission to the Truck Driver Training Program is required prior to registration. A valid Commercial Driver's License (CDL) permit will meet the prerequisite for TDT 118.

TDT 120 Truck Driver Training Refresher**3.5 cr. hrs. 4 periods (3 lec., 1 lab)**

Overview of Truck Driver skill requirements. Includes all range and road skills with instruction in control, backing, visual search, shifting, turning, space and speed management, and hazard perception.

Information: Valid Commercial Driver's License and Department of Transportation physical and drug screen are required before enrolling in this course.

Veterinary Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

VET 100 Introduction to Veterinary Technology**3 cr. hrs. 3 periods (3 lec.)**

Introduction into the role of the veterinary technician careers and career paths, legal applications, ethical responsibilities, professional attitudes, medical terminology, and occupational safety issues. Also includes breed identification of domestic animals, behavioral characteristics of animals, human-animal bonding, and dealing with pet loss.

Prerequisite(s): With a grade of C or better: REA 091 (or assessment into REA 112), and MAT 095 or 097 or Module 35 in MAT 089A or 089B (or assessment into MAT 151 or higher).

Corequisite(s): VET 110, VET 130, VET 225

Information: Admission to the Veterinary Technology program is required before enrolling in this course.

VET 106 Veterinary Practice Assistant I**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to the basic skills needed to assist veterinary professionals in the quality care of animals. Includes animal restraint, nursing, vaccinations and other basic assisting skills.

Corequisite(s): VET 107, VET 108

Information: Consent of program faculty is required before enrolling in this course.

VET 107 Veterinary Practice Assistant II**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of VET 106. Build on the foundation skills of veterinary clinical care in VET 106. Includes foundations in pharmacy order fulfillment, supportive roles in surgical environment, care of surgical equipment, and the assistant's role in obtaining samples and submitting them for diagnostic results. Also includes an introduction to veterinary imaging and restraint techniques needed related to imaging.

Corequisite(s): VET 106, VET 108

Information: In order to continue in VET 107, students must complete VET 106 with a grade of C or higher.

VET 108 Introduction to Veterinary Facility Practices**6 cr. hrs. 6 periods (6 lec.)**

Introduction into the role of the veterinary practice assistant in the veterinary medicine profession. Includes careers and career paths, legal applications, ethical responsibilities, professional attitudes, medical terminology, and occupational safety issues. Also includes standard office procedures with an emphasis in client relations and education and computer skills, breed identification of domestic animals, behavioral characteristics of animals, human-animal bonding, and dealing with pet loss.

Corequisite(s): VET 106, VET 107

VET 110 Veterinary Nursing Procedures I**3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to veterinary nursing techniques. Includes physical examination, history taking, injections, preventative health care, basic nutrition and animal restraint. Also includes husbandry techniques, kennel management and sanitation of kennel facilities for dogs and cats.

*Corequisite(s):*VET 100, VET 130, VET 225*Information:* Admission to the Veterinary Technology program is required before enrolling in this course.**VET 111 Veterinary Nursing Procedures II****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of VET 110 with an emphasis on venipuncture, catheterization, fluid therapy and basic dental care procedures. Includes complete physical examinations, wound management, CPR and first aid.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130 and 225.*Corequisite(s):*VET 120, VET 131, VET 150**VET 114 Veterinary Dental Procedures****1 cr. hrs. 1 periods (1 lec.)**

Anatomy, physiology, diagnostics, and therapeutics specific to the oral health of companion animal species.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130 and 225.*Corequisite(s):*VET 114LB**VET 114LB Veterinary Dental Procedures Lab****1 cr. hrs. 3 periods (3 lab)**

Anatomy, physiology, diagnostics, and therapeutics specific to the oral health of companion animal species. Includes procedures on live patients with dental radiographs, local anesthetic blocks, teeth scaling, teeth polishing, and preventative care.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130 and 225.*Corequisite(s):*VET 114**VET 120 Clinical Pathology I****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Introduction to clinical pathology. Includes pathology terminology, basic laboratory procedures and specimen collection and preservation. Also includes basic use and care of microscopes.

Prerequisite(s): Within the last two years: with a C or better in VET 100, 110, 130 and 225.*Corequisite(s):*VET 111, VET 131, VET 150**VET 121 Clinical Pathology II****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of VET 120. Includes review of laboratory procedures, urinalysis, and cytologic evaluations. Also includes pathogens, parasites, and hematologic evaluations.

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131 and 150.*Corequisite(s):*VET 200, VET 211**VET 130 Animal Anatomy and Physiology I****4 cr. hrs. 6 periods (3 lec., 3 lab)**

Anatomy and physiology of domestic animals. Includes the study of body systems such as skeletal, muscular, integumentary, special sense organs, circulatory and digestive. Also includes principles of disease.

Prerequisite(s): Within the last eight years with a C or better: BIO 156IN or BIO 181IN (or required score on BIO Challenge Exam), and CHM 130IN or CHM 151IN (or score of 34 or higher on the CHM 130 Challenge Exam.)*Corequisite(s):*VET 100, VET 110, VET 225*Information:* Admission to Veterinary Technology program is required before enrolling in this course.**VET 131 Animal Anatomy and Physiology II****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of VET 130. Includes the study of the nervous, respiratory, and reproductive systems and special sense organs. Also includes endocrine, urinary systems, and principles of disease.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130 and 225.*Corequisite(s):*VET 111, VET 120, VET 150

VET 150 Pharmacology**2 cr. hrs. 2 periods (2 lec.)**

Introduction to regulations of biologics and pharmaceuticals with a focus on drugs and their clinical application.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130, and 225.*Corequisite(s):* VET 111, VET 120, VET 131**VET 150LB Clinical Veterinary Pharmacology Laboratory****1 cr. hrs. 2 periods (2 lab)**

Introduction to regulations of biologics and pharmaceuticals. Includes classification, dosage calculations, labeling, logging and packaging of drugs.

Prerequisite(s): Within the last two years: C or better in VET 100, 110, 130, and 225.*Corequisite(s):* VET 111, VET 114, VET 120, VET 131**VET 191 Veterinary Technician Clinical Experience I****3 cr. hrs. 12 periods (12 lab)**

Supervised 200 hour clinical experience, which will be conducted at local veterinary hospitals, clinics, laboratory, and zoo or research facilities.

Information: Completion of first year Veterinary Technology courses is required before enrolling in this course.**VET 196 Independent Study in Veterinary Technology****1-3 cr. hrs. 1-3 periods (1-3 lec.)**

Independent study course offering students an inroad to focus on a particular veterinary medical subject or subjects, to study that subject, and to hone manual skills while working in an independent format. Content of study and its manner of execution must be developed through mutual agreement between the student and the instructor prior to enrollment in the course.

Information: Consent of instructor is required before enrolling in this class.**VET 200 Anesthetic and Surgical Nursing****2 cr. hrs. 2 periods (2 lec.)**

Explore scientific principles on which asepsis, sterilization, staff and patient safety, and nursing techniques are practiced in the anesthetic and surgical environment. Includes pharmacology and physiology associated with anesthesia. Also includes content knowledge behind the application in the laboratory setting and in the field, which lead to favorable clinical outcomes.

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131, and 150.*Corequisite(s):* VET 121, VET 200LB, VET 210, VET 211**VET 200LB Anesthetic and Surgical Nursing Laboratory****1 cr. hrs. 3 periods (3 lab)**

This is the lab portion of VET 200. Foundation of techniques and procedures involving surgery and anesthesia. Includes preparation, maintenance care, sterilization and identification of instruments and surgical equipment. Also includes active participation in routine surgical procedures as an operating nurse (e.g. anesthesia induction, anesthetic maintenance, anesthetic monitoring, post-surgical patient care, surgical suite maintenance, and surgical and medical record keeping.)

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131, and 150.*Corequisite(s):* VET 121, VET 200, VET 210, VET 211**VET 205 Radiology and Imaging Techniques****2 cr. hrs. 2 periods (2 lec.)**

Principles and techniques of radiographic imaging. Includes the physics behind production of X-rays, ultrasound and advanced imaging. Introduction to radiographic equipment, endoscopy equipment, ultrasound equipment and 3 dimensional imaging units. Instruction in workplace safety measures regarding imaging equipment.

Prerequisite(s): Within the last two years: C or better in VET 130 and 131.*Corequisite(s):* VET 205LB**VET 205LB Radiology and Imaging Techniques Lab****1 cr. hrs. 2 periods (2 lab)**

The lab portion of VET 205. Includes principles and techniques of radiographic imaging. Also includes the production of X-rays, radiographic equipment, safety measures and radiographic quality, diagnostic radiographs, positioning of patients, darkroom techniques and X-ray processing.

Prerequisite(s): Within the last two years: C or better in VET 130 and 131.*Corequisite(s):* VET 205

VET 210 Veterinary Nursing Procedures: Large Animal Care**1 cr. hrs. 1 periods (1 lec.)**

Veterinary nursing techniques for large animals. Includes restraint procedures; nursing care and behavior of large animals; preventative medicine; nutrition; and large animal medical and surgical procedures. Also includes mentoring techniques; teamwork; communications; and health problem assessment involving kennel management.

Prerequisite(s): VET 111, 120, 131 and 150.*Corequisite(s):* VET 210LB**VET 210LB Veterinary Nursing Procedures Lab: Large Animal Care****1 cr. hrs. 3 periods (3 lab)**

The lab portion of VET 210. Veterinary nursing techniques for large animals. Includes restraint procedures; nursing care and behavior of large animals; application of preventative medicine; application of nutrition; and large animal medical and surgical procedures. Also includes mentoring techniques; teamwork; communications; and health problem assessment involving kennel management.

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131 and 150*Corequisite(s):* VET 210*Information:* Registration for this course is restricted to students who have completed the first year in the Veterinary Technician Program.**VET 211 Veterinary Nursing Procedures: Avian, Exotic, and Lab Animals****1 cr. hrs. 1 periods (1 lec.)**

Veterinary nursing techniques for avian, exotic and laboratory animals. Includes care and management of laboratory animals and exotic companion animals; nursing procedures; preventative health care; and restraint. Also includes Animal Welfare knowledge and principles of regulations of animal use in research.

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131, 150.*Corequisite(s):* VET 121LB*Information:* Registration for this course is restricted to students who have completed the first year in the Veterinary Technician Program.**VET 211LB Veterinary Nursing Procedures Lab: Avian, Exotic, & Lab Animals****1 cr. hrs. 3 periods (3 lab)**

The lab portion of VET 211. Veterinary nursing techniques for avian, exotic and laboratory animals. Includes care and management of laboratory animals and exotic companion animals; husbandry; nursing procedures; preventative health care; and restraint. Also includes mentoring techniques; teamwork; communications; and health problem assessment involving kennel management.

Prerequisite(s): Within the last two years: C or better in VET 111, 120, 131, 150.*Corequisite(s):* VET 211*Information:* Registration for this course is restricted to students who have completed the first year in the Veterinary Technician Program.**VET 220 Clinical Pathology III****3 cr. hrs. 4 periods (2 lec., 2 lab)**

Continuation of VET 121 for summation of laboratory skills and techniques needed of the Veterinary Technician. Includes blood chemistry, bacteriologic and microbiologic procedures and necropsy.

Prerequisite(s): Within the last two years: C or better in VET 121, 200, and 200LB.*Corequisite(s)***VET 225 Veterinary Hospital Procedures****3 cr. hrs. 3 periods (3 lec.)**

Standard office procedures with an emphasis in client relations, education and computer skills. Ethics in veterinary medicine, state and federal regulations governing veterinarian practices and all aspects of clinical patient care will be covered.

Corequisite(s): VET 100, VET 110, VET 130*Information:* Admission to the Veterinary Technology program is required before enrolling in this course.**VET 230 VTNE and AZ State Veterinary Medical Exam****3 cr. hrs. 3 periods (3 lec.)**

Application of the Arizona Revised Statutes and Administrative Rules pertaining to veterinary medicine. Includes test taking skills, test anxiety reduction techniques.

VET 291 Veterinary Technician Clinical Experience II**3 cr. hrs. 12 periods (12 lab)**

Supervised 200 hour clinical experience, which will be conducted at local veterinary hospitals, clinics, laboratory, and zoo or research facilities.

Information: Registration for this course is restricted to students enrolled in their final semester of the Veterinary Technician program. This course may be taken concurrently with the final semester of VET coursework. Instructor approval required.

Welding

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

WLD 110 Basic Arc and Oxyacetylene Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Procedures and techniques in arc and oxyacetylene welding. Includes health, safety, and environmental practices, welding terminology, arc and oxyacetylene welding equipment, proper welding procedures for arc and oxyacetylene, arc and oxyacetylene steel welding, welding machines and polarities, filler metal identification, and welding positions, and oxyacetylene cutting.

WLD 115 Blueprint Reading/Estimating**4 cr. hrs. 4 periods (4 lec.)**

Principles and procedures for interpreting structural blueprints and determining materials and labor costs. Includes fundamentals of blueprint reading, welding print format and types of fabrication blueprints, welding symbols and sizes, structural shapes and symbols, and blueprint interpretation. Also includes introduction to estimating, bonds and insurance, materials specifications, labor, structural steel systems, and steel fabrication checklist.

Prerequisite(s): Within the last three years: MAT 089A through Module 10, or ICS 081 with a C or better, or required score on the Mathematics assessment test.

WLD 120 Welding for Metal Sculpture**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Basic welding techniques and processes used in metal sculpture design and fabrication. Includes oxyacetylene safety practice, oxyacetylene equipment handling, oxyacetylene welding procedures, assembly of portable equipment, oxyacetylene cutting and design, and oxyacetylene bronze build-up. Also includes arc welding safety practices, arc welding procedures, basic joint design, currents and polarities, arc welding machines and electrodes, and arc designing for sculpture.

WLD 160 Arc Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Principles and techniques of joining metals with an electric arc as the source. Includes arc welding uses, safety, techniques, flame cutting, joint design, welding costs, electric currents and power sources, carbon arc cutting, filler metal selection, hardfacing, and metal identification.

Prerequisite(s): WLD 110.

Information: Prerequisite may be waived with appropriate work experience or course work. See a welding instructor or advisor for prerequisite information.

WLD 250 Pipe Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Principles and techniques of pipe welding. Includes introduction to pipe layout and drawing equipment. Also includes an introduction to performance testing, types of pipe, methods and preparation of pipe joints and miter joints, methods of joining pipe and miter joints.

Prerequisite(s): WLD 160.

Information: Prerequisite(s) may be waived with appropriate work experience. See a welding instructor or advisor for prerequisite information.

WLD 261 Gas Metal Arc Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Procedures and techniques in Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW) processes. Includes health, safety, and environmental practices; welding terminology, GMAW and FCAW processes and equipment. Also includes equipment operation, welding techniques, power source and wire feed types and controls; welding currents and polarities; welding wires in GMAW and FCAW processes; shielding gases; and mild steel and aluminum welding.

WLD 262 Gas Tungsten Arc Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Procedures and techniques in the Gas Tungsten Arc Welding (GTAW) process. Includes health, safety, and environmental practices; welding terminology, GTAW process and equipment, equipment operation and techniques. Also includes power source types and controls, welding currents and polarities, tungsten electrodes, shielding gases, mild steel welding, aluminum welding, stainless steel welding, and GTAW certification.

Prerequisite(s): WLD 110.

WLD 263 Layout and Fabrication Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Principles and techniques of steel layout and fabrication welding. Includes measurement, print reading review, layout tools, layout techniques, hand-held power tool safety and use, large power tool safety and use, drawing interpretation, structural methods, and welding projects.

Prerequisite(s): WLD 115, 261 and GTM 105 (or placement into MAT 092 or higher).

Recommendation: Completion of WLD 160 before enrolling in this course. If any recommended course is taken, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Information: Prerequisites may be waived for appropriate work experience. See a welding instructor or advisor for prerequisite information.

WLD 264 Introduction to CNC Plasma Arc and Basic Robotic Welding**4 cr. hrs. 6 periods (2 lec., 4 lab)**

Procedures and techniques in Computer Numerical Control (CNC) plasma arc cutting and robotic automated welding. Includes health, safety, and environmental practices; history of plasma arc cutting; software and coordinate systems; tool paths, importing images, and cutting with a CNC plasma machine. Also includes programming and operation procedures for Gas Metal Arc Welding (GMAW) process using a Fanuc R30iA robotics welding cell, Teach Pendent Programs (TPP), and maintenance.

Prerequisite(s): CAD 101 or 117; WLD 110 and 261.

Information: Prerequisite(s) may be waived with welding industry experience. WLD 264A and 264B combined are equivalent to WLD 264.

WLD 264A Introduction to CNC Plasma Arc Welding: Module A**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Procedures and techniques in Computer Numerical Control (CNC) plasma arc cutting. Includes health, safety, and environmental practices; history of plasma arc cutting; software and coordinate systems; tool paths, importing images, and cutting with a CNC plasma machine.

Prerequisite(s): CAD 101 or 117; WLD 110 and 261.

Information: Prerequisite(s) may be waived with welding industry experience. Constitutes approximately first one-half of WLD 264. WLD 264A and 264B combined are equivalent to WLD 264.

WLD 264B Introduction to Basic Robotic Welding: Module B**2 cr. hrs. 3 periods (1 lec., 2 lab)**

Procedures and techniques in robotic automated welding. Includes safety, programming and operation procedures for Gas Metal Arc Welding (GMAW) process using a Fanuc R30iA robotics welding cell, Teach Pendent Programs (TPP), and maintenance.

Prerequisite(s): CAD 101 or 117; WLD 110 and 261.

Information: Prerequisite(s) may be waived with welding industry experience. Constitutes approximately second one-half of WLD 264. WLD 264A and 264B combined are equivalent to WLD 264.

WLD 296 Welding Independent Projects**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Self-directed laboratory projects. Includes project objectives, procedures, safety practices, welding processes, set-up for the project, and project completion.

Prerequisite(s): WLD 110.

Information: Welding industry experience or welding skills may be substituted for the prerequisite requirement. See a welding instructor for approval. May be repeated up to three times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

Wellness Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

WED 110 Introduction to Complementary & Alternative Medicine

3 cr. hrs. 3 periods (3 lec.)

Definition of health; exploration of mind-body-spirit connection in health; various therapeutic modalities; identification of strengths and limitations of alternative therapies. Also includes development of ability to critically review written material in the alternative therapy area.

WED 111 Self Care for Personal Wellness

2 cr. hrs. 2 periods (2 lec.)

Emphasis on mind-body methods for personal wellness through integration of physical, emotional, social, and spiritual dimensions of being. Development of a personal practice to achieve and sustain a balanced program to support personal health and well being.

Writing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

WRT 090 English Composition Fundamentals

3 cr. hrs. 3 periods (3 lec.)

Introduction to academic writing. Includes basic practice in employing critical thinking skills, practicing multiple writing processes, using appropriate conventions in creating and revising texts, composing using appropriate technology, and analyzing and writing paragraphs and short essays.

Prerequisite(s): With a C or better: WRT 070, or 075, or ESL 088WG; or ICS 079 with a B or better, or required score on the Writing assessment.

Information: WRT 090A, 090B, and 090C together constitute WRT 090. Equivalent to WRT 096.

Offered: Fall, Spring, Summer.

WRT 090P English Composition Fundamentals Plus

4 cr. hrs. 4 periods (4 lec.)

Development of fundamental writing skills and introduction to academic writing. Includes basic practice in employing critical thinking skills, practicing multiple writing processes, using appropriate conventions in creating and revising texts, composing using appropriate technology, and analyzing and writing paragraphs and short essays.

Prerequisite(s): ICS 079 with a C or better or placement into WRT 090P on the Writing assessment.

Information: WRT 090PA, 090PB, 090PC, and 090PD together constitute WRT 090P. Equivalent to WRT 096P.

WRT 090S English Composition Fundamentals

4 cr. hrs. 4.5 periods (3.5 lec., 1 lab)

Introduction to academic writing. Includes basic practice in employing critical thinking skills, practicing multiple writing processes, using appropriate conventions in creating and revising texts, composing using appropriate technology, and analyzing and writing paragraphs and short essays. Integrates an intensive studio component that includes specific strategies designed to improve student performance and success.

Prerequisite(s): ICS 079 with a C or better or placement into WRT 090S on the writing assessment.

Information: Equivalent to WRT 090. For students who assess into WRT 070 but believe that with additional studio instruction they can successfully complete WRT 090.

WRT 101 English Composition I

3 cr. hrs. 3 periods (3 lec.)

Principles and practices of college-level writing. Includes critically reading college texts, writing college-level essays using a variety of strategies, practicing diverse writing processes, and using research effectively.

Prerequisite(s): Requires both Reading and Writing prerequisites. Reading: With a C or better REA 091 or concurrent enrollment, or placement into REA 112. Writing: With a C or better WRT 090 or 090P or 090S or with a B or better ESL 088WG, or placement into WRT 101.

Gen Ed: Meets AGEC - ENGL; Meets CTE - COMM.

WRT 101HC English Composition I: Honors**3 cr. hrs. 3 periods (3 lec.)**

Principles and practices of college-level writing. Includes critically reading college texts, writing college-level essays using a variety of strategies, practicing diverse writing processes, using research effectively, and engage in critical and construction reflection.

Prerequisite(s): Honors-level score on the Reading and Writing assessment test.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors Content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - ENGL; Meets CTE - COMM. with research presented in class or to a wider audience. **Gen Ed:** Meets AGEC - ENGL; Meets CTE - COMM.

WRT 101S English Composition I / Integrated Studio**4 cr. hrs. 4.5 periods (3.5 lec., 1 lab)**

Principles and practices of college-level writing. Includes critically reading college texts, writing college-level essays using a variety of strategies, practicing diverse writing processes, using research effectively, and using standard grammar and mechanics.

Prerequisite(s): With a C or better: WRT 090P or 090S; or ESL 088WG with a B or better; or placement into WRT 090 on the Writing assessment.

Information: Equivalent to WRT 101. For students who assess into WRT 090 but believe that with additional studio instruction they can successfully complete WRT 101.

Gen Ed: Meets AGEC - ENGL; Meets CTE - COMM.

WRT 102 English Composition II**3 cr. hrs. 3 periods (3 lec.)**

Continuation of WRT 101. Includes reading, analyzing, and discussing various types of text; writing analytical or critical papers; and developing research skills. Also includes writing a research paper.

Prerequisite(s): With a C or better: WRT 101, 101S, or 107.

Gen Ed: Meets AGEC - ENGL; Meets CTE - OTHER.

WRT 102HC English Composition II: Honors**3 cr. hrs. 3 periods (3 lec.)**

Continuation of WRT 101 or WRT 101HC. Includes reading, analyzing, and discussing various types of text; writing analytical or critical papers; and developing research skills. Also includes writing a research paper and additional Honors content.

Prerequisite(s): With a B or better: WRT 101, 101HC, 101S, or 107.

Information: Must qualify for Honors program. Instructor or advisor/counselor approval may be required before registering for this course. Honors content may include: Intensive research using highest standards and best practices for the discipline, and a significant number/variety of readings of both primary and secondary sources. Also may include a high-quality, peer reviewed paper or project in a format appropriate for the discipline with research presented in class or to a wider audience.

Gen Ed: Meets AGEC - ENGL; Meets CTE - COMM.

WRT 125 Beginning Poetry Writing**3 cr. hrs. 3 periods (3 lec.)**

Poetry for beginners. Includes beginning poetry writing techniques, beginning evaluation and critical response to poems, and beginning original writing.

Information: May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 126 Basics of Short Story Writing**3 cr. hrs. 3 periods (3 lec.)**

Short fiction writing for beginners. Includes beginning fiction writing techniques, beginning critical responses to fiction, and beginning original writing.

Information: May be taken three times for a maximum of nine credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 154 Career Communications**3 cr. hrs. 3 periods (3 lec.)**

Job related writing skills for use in career communications. Includes writing for audiences and situations at the beginning and intermediate levels, applying business writing and organization conventions, completing job-related forms at the beginning and intermediate levels, and writing resumes.

Prerequisite(s): WRT 090 or 096 with a C or better or required score on writing assessment test.

Gen Ed: Meets CTE - COMM.

WRT 162 Literary Magazine Workshop**3 cr. hrs. 3 periods (3 lec.)**

Creative magazine publication. Includes review of college literary magazines, critical review, magazine design and editing, magazine production techniques, as well as printing and distribution.

Information: May be taken two times for a maximum of six credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 196 Independent Studies in Writing**1-4 cr. hrs. 3-12 periods (3-12 lab)**

Independent projects in writing to be arranged with the instructor.

Information: May be taken four times for a maximum of sixteen credit hours. *Information:* May be taken four times for a maximum of sixteen credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 205 Introduction to Poetry Writing**3 cr. hrs. 3 periods (3 lec.)**

Writing contemporary poetry. Includes poetry writing techniques, evaluation and critical response to poems, and original writing.

Prerequisite(s): WRT 102 or 108 with a C or better.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

WRT 206 Short Story Writing**3 cr. hrs. 3 periods (3 lec.)**

Short fiction writing. Includes fiction writing techniques, critical responses to fiction, and original writing.

Prerequisite(s): WRT 102 or 108 with a C or better.

Gen Ed: Meets AGEC - FA; Meets - CTE - A&H.

WRT 207 Creative Nonfiction**3 cr. hrs. 3 periods (3 lec.)**

Creative nonfiction writing. Includes techniques of creative nonfiction writing, original writing, and critical responses to nonfiction.

Prerequisite(s): WRT 102 with a grade of C or better.

Information: Consent of instructor is required to enroll in this course.

WRT 215 Advanced Poetry Writing**3 cr. hrs. 3 periods (3 lec.)**

Advanced poetry writing workshop. Includes continued focus on techniques of writing, evaluation and critical responses to poetry, and original writing. Also includes more intensive study of contemporary poets and poetry.

Prerequisite(s): WRT 125 or 205 with a C or better.

Information: Consent of instructor is required to enroll in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 216 Advanced Fiction Writing**3 cr. hrs. 3 periods (3 lec.)**

Advanced techniques of fiction writing. Includes advanced techniques of fiction writing, original writing, and critical response to fiction. Also includes preparing manuscripts for publication.

Prerequisite(s): WRT 206 with a C or better.

Information: Consent of instructor is required to enroll in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 217 Advanced Creative Nonfiction**3 cr. hrs. 3 periods (3 lec.)**

Advanced techniques of creative nonfiction writing. Includes advanced original writing, advanced critical responses to nonfiction, and marketing techniques.

Prerequisite(s): WRT 207 with a C or better.

Information: Consent of instructor is required to enroll in this course. May be taken four times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 226 Special Projects in Fiction**3 cr. hrs. 3 periods (3 lec.)**

Advanced fiction writing for book-length projects. Includes techniques for book-length fiction writing, original writing and/or revision process, critical responses to fiction, and marketing and publishing of fiction books.

Prerequisite(s): WRT 216 with a C or better.

Information: Consent of instructor is required to enroll in this course. *Information:* May be taken four times for a maximum of twelve credit hours. If this course is repeated, see a financial aid or Veteran's Affairs advisor to determine funding eligibility as appropriate.

WRT 254 Advanced Professional Communications**3 cr. hrs. 3 periods (3 lec.)**

Business writing and communication strategies and practices. Includes how to develop and improve business communication skills. Also includes how to apply business writing strategies in professional fields.

Prerequisite(s): With a C or better: WRT 102 or 108.

Center for Training and Development

Clock Hour Modules

Adult Education

For courses numbered 098, 198, 298, see “Topic Courses” on page 221

AE 050 Adult Basic Education - Math I

0 cr. hrs. 1-100 periods

Cover basic math skills, such as addition, subtraction, multiplication, division, fractions, and decimals through a student centered, participatory approach. The course is targeted at students who test between 000-450 on the Test of Adult Education (TABE). This course will be a hybrid course, and students will be required to complete some of their coursework online in addition to attending face-to-face classes. Classes prepare students to advance in their math studies with the end goal of passing the high school equivalency examination.

Aviation Technology

For courses numbered 098, 198, 298, see “Topic Courses” on page 221

AV 160 Part 65 Airframe and Powerplant

0 cr. hrs. 64 periods

This 64-hour noncredit clock hour course addresses general aviation information for experienced aircraft mechanics that possess Federal Aviation Administration (FAA) authorization for certification and seek to close gaps in their knowledge. Includes maintenance fundamentals such as Federal Aviation Regulations, aviation math, aircraft drawings, and basic electricity. Also includes hands-on competencies to increase knowledge by performing inspections, functional checks, and adjustments on a multitude of airframe and powerplant systems; and gain specialized skills in aircraft structural repair.

AV 160A Part 65 Airframe and Powerplant A: General Mechanics

0 cr. hrs. 20 periods

This 20-hour noncredit clock hour course constitutes approximately one-third of AV 160 (AV 160A, 160B, and 160C together constitutes AV 160), and addresses general aviation information for experienced aircraft mechanics that possess Federal Aviation Administration (FAA) authorization for certification and seek to close gaps in their knowledge. Includes maintenance fundamentals such as Federal Aviation Regulations, aviation math, aircraft drawings, and basic electricity. Also includes hands-on competencies to increase knowledge by performing inspections, functional checks, and adjustments on a multitude of airframe and powerplant systems; and gain specialized skills in aircraft structural repair.

AV 160B Part 65 Airframe and Powerplant B: Airframe Mechanics

0 cr. hrs. 24 periods

This 24-hour noncredit clock hour course constitutes approximately one-third of AV 160 (AV 160A, 160B, and 160C together constitutes AV 160), and addresses general aviation information for experienced aircraft mechanics that possess Federal Aviation Administration (FAA) authorization for certification and seek to close gaps in their knowledge. Includes maintenance fundamentals such as Federal Aviation Regulations, aviation math, aircraft drawings, and basic electricity. Also includes hands-on competencies to increase knowledge by performing inspections, functional checks, and adjustments on a multitude of airframe and powerplant systems; and gain specialized skills in aircraft structural repair.

Prerequisite(s): AV 160A or concurrent enrollment.

AV 160C Part 65 Airframe and Powerplant C: Powerplant Mechanics

0 cr. hrs. 20 periods

This 20-hour noncredit clock hour course constitutes approximately one-third of AV 160 (AV 160A, 160B, and 160C together constitutes AV 160), and addresses general aviation information for experienced aircraft mechanics that possess Federal Aviation Administration (FAA) authorization for certification and seek to close gaps in their knowledge. Includes maintenance fundamentals such as Federal Aviation Regulations, aviation math, aircraft drawings, and basic electricity. Also includes hands-on competencies to increase knowledge by performing inspections, functional checks, and adjustments on a multitude of airframe and powerplant systems; and gain specialized skills in aircraft structural repair.

Prerequisite(s): AV 160A or concurrent enrollment.

Business And Office

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

BO 700 Basic Office Skills

0 cr. hrs. 49 periods

Basic skills to organize and maintain office filing systems. Includes basic skills in Microsoft Windows, Word, and Excel. Also includes how to develop telephone skills for the office.

BO 701A Document Formatting I

0 cr. hrs. 30 periods

Create business documents using keyboard Pro 4 and Microsoft Word software. Includes how to save a file, create a folder, print, edit a document.

BO 701B Document Formatting for Medical Office Specialist (MOS)

0 cr. hrs. 40 periods

Introduction to typing memos and emails for medical related business. Includes the basics of document formatting, and word processing, such as creating and saving documents. Includes an overview of editing features and how to block and modify block letter format for letters and envelopes. Also includes completing forms using a typewriter.

BO 701C Document Formatting for File Clerk

0 cr. hrs. 30 periods

Introduction to creating and formatting business documents using the Keyboarding Pro 4 and Microsoft Word software packages. Includes creating, saving, editing and printing document files as well as editing features which include copying and pasting text, changing text fonts, using font attributes such as bolding and italic, and other basic document editing features.

BO 702A Recordkeeping I

0 cr. hrs. 30 periods

Basic filing skills to function efficiently in a modern office environment. Includes alphabetizing by surname, surnames with first initials, surnames with titles or degrees, company names, individual and business names, abbreviations and single letters used in individual and firm names.

BO 702B Recordkeeping for Medical Office

0 cr. hrs. 32 periods

Introduction to records management with emphasis on the needs of a medical office. Includes how to organize and maintain files using various filing keys along with an introduction to financial recordkeeping.

BO 702C Recordkeeping for Unit Clerk

0 cr. hrs. 25 periods

Introduction to records management with emphasis on the needs of a medical office. Includes how to organize and maintain files using various filing keys along with an introduction to financial recordkeeping.

BO 706 Business Calculation I

0 cr. hrs. 30 periods

Introduction to basic electronic office calculator and its use in the business environment. Includes parts of the machine and function, as well as how functions relate to business practice. Includes an introduction to the proper operation of a 10-Key calculator using touch method of numeric entry. Includes the effective use of the subtotal, non-add and subtracting keys and changing the paper tape. Also includes the addition, subtraction, multiplication and division of whole numbers.

BO 709 Microsoft Word I

0 cr. hrs. 25 periods

Introduction to basics of Microsoft Word with emphasis on creation of new documents and editing of existing documents using alignments, font changes and inserting pictures. Includes how to create a flyer with an inserted graphic image.

BO 710A Office Practice I

0 cr. hrs. 75 periods

Basic skills needed to function efficiently in a modern office environment. Includes filing, mail handling, basic recordkeeping, spelling of commonly misspelled business words, converting dates to number format and soft skills such as stress and time management. Also includes the proper use and operation of common office equipment.

BO 710B Office Practice for MOS I

0 cr. hrs. 73 periods

Basic medical office skills. Includes the basics of filing in a medical office, proper telephone skills, use of a facsimile machine, and other office machines.

BO 710C Medical Billing and Insurance**0 cr. hrs. 31 periods**

Basic office practices for a health care record keeping. Includes cover medical insurance claims processing terminology and how medical insurance works.

BO 710D Office Practice for Coders**0 cr. hrs. 5 periods**

Basic foundations for coding in the health care field. Includes a focus on work improvement skills. Also includes the concepts of time management, stress management, organization, memory tools, and positive communication techniques.

BO 710G Office Practice for Business**0 cr. hrs. 34 periods**

Overview of basic office skills for business including how to prepare a deposit slip, write checks and balance a register, reconcile a bank statement, and record petty cash transactions. Includes use of office equipment, recordkeeping and file management, customer service skills, and basic work and personal development skills.

BO 711 Medical Insurance**0 cr. hrs. 30 periods**

An overview of confidentiality laws with respect to health information, insurance terminology, and insurance forms. Includes how to verify patient insurance information and how different insurance organizations work.

BO 713 Medical Terminology and Human Anatomy I**0 cr. hrs. 18 periods**

Basic medical terminology and human anatomy pertaining to the structural parts of the body. Includes analysis of medical terms that combine suffixes and prefixes to other words; work with and describe terms used to describe pathological appearance, growth, and spread of tumors. Also includes introduction to the name, location, physical description, and functions of the organs that make up the digestive system; and introduction to the physical properties of X-Rays.

BO 714 Introduction to Diagnostic Coding**0 cr. hrs. 8 periods**

Overview of Diagnostic Coding. Includes the concepts of ICD-9 and format of ICD9-CM along with the Centers for Medicare and Medicaid Services (CMS) guidelines. Also includes using diagnostic codes and different versions of coding information. Also includes information on current and accurate coding guidelines.

BO 716 Introduction to Procedural Coding**0 cr. hrs. 15 periods**

Introduction to the structure of Current Procedural Coding (CPT) coding. Includes an overview of CPT coding that is a part of a uniform and reliable nationwide system of recording patient data. Also includes procedural coding for common outpatient services in radiology, laboratory, and surgical departments.

BO 718 Microsoft Excel I**0 cr. hrs. 35 periods**

Introduction to Microsoft Excel spreadsheet applications. Includes spreadsheets concepts, formulas and functions, and formatting worksheets and cells. Also includes an introduction to working with charts and graphics.

BO 719 Microsoft Access I**0 cr. hrs. 35 periods**

Microsoft Access at the beginning level. Includes an overview of Access, creating a new database, creating tables, and working with tables. Includes creating and using select queries and reports. Also includes creating a report that contains totals.

BO 725 Health Care Statistics**0 cr. hrs. 30 periods**

Concepts and skills to use statistics in the healthcare environment. Includes computing percentages and tracking inpatient census. Includes the role of statistics in analyzing and reporting vital records, such as ambulatory and long-term care statistics. Also includes how to enhance presentations through the use of statistics.

BO 730 Quality Management**0 cr. hrs. 30 periods**

Quality management skills for medical offices. Includes how to access and improve quality using external and internal quality concerns and strategies. Includes how to manage quality in organizations that employ peer review processes. Also includes utilization, risk management, and medical staff credentialing as quality management tools.

BO 750 Keyboard Operator**0 cr. hrs. 80 periods**

Introduction to the basic operation and layout of a standard computer keyboard. Includes how to touch type using the correct fingers for the correct keys without looking at the keyboard.

BO 760 Microsoft Windows**0 cr. hrs. 30 periods**

Basic skills to operate software in a Microsoft Windows environment. Includes the basics of vocabulary, use of general features of Windows; started and shutting down Windows; use of the control panel, My Computer, and Explorer; and accessory applications.

BO 800 Business English**0 cr. hrs. 20 periods**

Basic English grammar for use in business. Includes punctuation, capitalization, parts of speech, sentence patterns, and proper tense.

BO 801A Document Formatting II**0 cr. hrs. 50 periods**

Continuation of BO 701A. Includes creating business documents using Keyboarding Pro 4 and Microsoft Word computer software. Includes how to create interoffice memos, emails, business letters, envelopes, and forms in a mailable format. Also includes the basic operation of an electronic typewriter.

BO 803A Telephone Procedures**0 cr. hrs. 25 periods**

Techniques to effectively use the telephone in an office environment. Includes the use of white and yellow page telephone directories, properly identification when answering a phone, obtaining and verifying information by phone, placing local and long distance calls, operation of a multi- button telephone, knowing time zone of person calling or being called, and awareness and use of miscellaneous telephone services.

BO 806 Business Calculation II**0 cr. hrs. 20 periods**

Continuation of BO 706. Includes elements of electronic office calculator to introduce student to time saving features needed for large volume calculations. Includes new +/- selector keys and decimal keys. Includes using calculator to calculate discounts with percentages and multiplication of decimals and fractions. Also includes how business calculations are used in business areas.

BO 807 Recordkeeping II**0 cr. hrs. 64 periods**

Continuation of BO 702A. Includes additional filing procedures, such as filing names with conjunctions, compound names, names with numbers, and identical names. Includes how to apply alphabetizing rules and the proper use of filing equipment. Includes additional preparation and maintenance of financial records for a business. Also includes preparation of bank deposit slips, writing and recording of checks, recording of petty cash transactions, and reconciling monthly bank account statements.

BO 809 Microsoft Word II**0 cr. hrs. 60 periods**

Continuation of BO 709. Additional Microsoft Word document editing and management features are introduced including file management, advanced page setup, preparing reports, tables, Auto Text, templates and wizards.

BO 810A Office Practice II**0 cr. hrs. 76 periods**

Continuation of BO 710A, Office Practice I. Includes an emphasis on clerical skills. Includes acceptable working qualities, communication skills, rules for typing numbers, use of Office Reference Manual and abbreviation rules for typing, telephone skills, and spelling of commonly misspelled business words.

BO 811 Microsoft Excel II**0 cr. hrs. 30 periods**

Continuation of BO 718. Includes spreadsheet concepts expanded to include Excel Lists, managing multiple worksheets and workbooks, working with what-if analysis, working financials functions, collaborating on a workbook and web page, and developing an Excel application.

BO 812 Microsoft Access II**0 cr. hrs. 30 periods**

Continuation of BO 719. Includes techniques to enhance database designs using the principles of normalization and table relationships. Also includes principles of table design, principles of table relationships, table design techniques, designing select queries, customizing form designs, working with data access pages, and customizing reports.

BO 813 Medical Terminology and Human Anatomy II**0 cr. hrs. 48 periods**

Continuation of BO 713. Includes locating and describing the organs of the urinary system, male and female reproductive systems, cardiovascular system, lymphatic system, and respiratory system. Also includes major organs and parts of nervous system; composition and function of blood; structure and functions of bones; joints and muscles; and the skin and its accessory structures.

BO 814 Intermediate Diagnostic Coding**0 cr. hrs. 70 periods**

Continuation of BO 714. Includes increased proficiency in applying skills to types and levels of coding using current coding standards. Also includes specialty codes, late effects codes, injury codes, adverse effects codes, and abstract codes with an emphasis on developing the critical thinking and analysis skills needed in a medical office.

Prerequisite(s): BO 714.

BO 815 Intermediate Procedural Coding**0 cr. hrs. 70 periods**

Continuation of BO 716. Expansion of coding information to specialty codes used for medical services provided to patients. Includes techniques and application to the various types and levels of coding utilizing the current coding standards. Includes the differences in coding in a hospital and a physician's office. Also includes an introduction to abstract coding with an emphasis on developing the coding analytical skills.

BO 816 3M Computerized Medical Coding**0 cr. hrs. 30 periods**

Introduction to the 3M Computerized Medical Coding system. Includes an introduction to the 3M Codefinder Coding and Reimbursement System. Also includes how to access the Help, Reference and accessory screens in 3M coding; coding using codes and reference guides in 3M Coding; determination of CPT-4 Codes in 3M Coding.

BO 817A Introduction to Medical Transcription**0 cr. hrs. 20 periods**

Overview, concepts, and skills for medical transcription. Includes proofreading standards, utilization of reference and resource materials, use of medical reports, and the basic functions of medical transcription machines. Also includes ergonomic issues and techniques.

BO 818 Computerized Patient Accounting**0 cr. hrs. 30 periods**

Introduction to computerized patient billing. Includes how to set up new patient records, use a computer for patient billing, and process patient transactions. Also includes how to produce reports, patient statements, and claims.

BO 819 Human Anatomy for Medical Coding**0 cr. hrs. 7 periods**

Brief introduction to the parts and systems that make up the human body. Includes concepts to familiarize coders with the structure of the human body to visualize where the medical services being coded take place on the human body. Also includes a general overview of the body.

BO 820 Patient Records and Communication Skills**0 cr. hrs. 21 periods**

Skills to maintain patient records. Includes communication skills for a Unit Clerk in a hospital.

BO 825 Medical Office Transcription**0 cr. hrs. 20 periods**

This course teaches the student skills in proofreading, common medical and surgical words unique to transcribed documents, Pharmacology, as well as punctuation and abbreviations commonly used. The student will learn how to use transcription equipment and reference books such as the PDR, Medical and Surgical Word Books. Upon completion, the student will demonstrate a proficiency in the transcription of a variety of healthcare documents.

BO 828 Electronic Medical Records (EMR)**0 cr. hrs. 90 periods**

Concepts and skills needed to create and use Electronic Medical Records. Includes how to create and use digital technology to store and analyze patient data, quality information, and statistical data for use in patient billing. Also includes statistical tracking and reporting, managing quality, and other tracking and reporting.

BO 850 Business Communications**0 cr. hrs. 45 periods**

The student will learn the development of basic business communication skills through reading, listening, speaking, and writing effectively. The module will include learning the composition of effective communication using modern and established methods: email, professional letters, memorandums, reports, listening, nonverbal and speaking skills.

BO 860 Microsoft Publisher**0 cr. hrs. 45 periods**

This course provides instruction on how to use Publisher tools to create newsletters, brochures, business forms, web pages and other professional documents. The course includes procedures on how to produce quality documents that combine text with graphics, illustrations, and photographs that will be suitable for outside commercial printing.

BO 901B Type Columns**0 cr. hrs. 9 periods**

Basics of arranging and typing material in a column form. These columns are sometimes referred to as tables or lists.

BO 906 Business Calculation III**0 cr. hrs. 12 periods**

Continuation of BO 806. Includes advanced office calculator operations such as dividing decimals, using product accumulations, use of memory key, constant multiplication and division, and use of the percentage key.

BO 909 Microsoft Word III**0 cr. hrs. 105 periods**

Continuation of BO 809. Includes advanced Microsoft Word features for use in typical office. Includes how to embed a table chart or watermark in a document; generating form letters, mailing labels and directories; creating newsletters and online forms.

BO 909A Microsoft Word IIIA**0 cr. hrs. 15 periods**

Concepts and skills to use Microsoft Word for business. Includes how to generate form letters, mailing labels, and directories.

BO 911 Microsoft Excel I 2003**0 cr. hrs. 30 periods**

Spreadsheet applications using Microsoft Excel at the intermediate level. Includes Excel Lists, managing multiple worksheets and workbooks, working with what-if analysis, working with financial functions, collaborating on a workbook and Web page, and developing an Excel application.

BO 912 Microsoft Access 2003 II**0 cr. hrs. 30 periods**

Microsoft Access at the intermediate level. Includes techniques to enhance database designs using the principles of normalization and table relationships. Also includes principles of table design, principles of table relationships, table design techniques, designing select queries, customizing form designs, working with data access pages, and customizing reports.

BO 914 Microsoft FrontPage**0 cr. hrs. 90 periods**

Course provides basic web page design skills for an entry-level administrative support position. Skills include creating a FrontPage Web site using a template; creating a new FrontPage Web; using images, hotspots, bookmarks, and Excel to create web pages; creating and using interactive forms on the web; using frames in web pages.

Prerequisite(s): Keyboarding speed of 25wpm, with max. 5 errors in a 5-minutes timed writing; MS Windows; MS Word; MS Excel, or CTD modules BO709, BO750, BO760, and BO811.

Corequisite(s): Test of Adult Basic Education (Scores: R-9.0; M-8.0; L-7.0)

BO 915 Advanced Procedural Coding**0 cr. hrs. 40 periods**

Continuation of BO 714 and 716. Includes advanced skills for both diagnostic and procedural coding in all medical environments. Includes concepts and applications of types and levels of coding with an emphasis on abstract coding and critical analysis. Also includes the study of the three levels of the Healthcare Common Procedure Coding system (HCPCS) and the role of Current Procedural Terminology coding within this system.

BO 917 Microsoft PowerPoint**0 cr. hrs. 30 periods**

Create and use Microsoft PowerPoint to prepare and present professional quality business presentations. Includes the use of viewing options to develop slides. Also includes how to import information, use templates, and automate portions of the presentation.

BO 918 Microsoft Excel III**0 cr. hrs. 30 periods**

Continuation of BO 811. Includes creating and using templates in Excel to automate the process of building new spreadsheets and workbooks. Also includes linking workbooks to consolidate data, linking worksheet and a chart to a Word document and saving the document with the link, recording a macro and assigning it to a toolbar button and menu command, and using Visual Basic Applications (VBA) to create procedures to automate work in Excel.

BO 920 Microsoft Access III**0 cr. hrs. 30 periods**

Continuation to BO 812. Includes advanced techniques for using complex queries, creating more efficient forms and reports, and automating forms. Also includes parameter and action queries, query joins and cross-tab queries using advanced form techniques, creating basic macros to automate forms, using macros to provide user interaction and automate tasks, and using advanced report techniques.

BO 921 Comprehensive Microsoft Excel**0 cr. hrs. 105 periods**

This course provides comprehensive instruction in Microsoft Excel. The course includes procedures for creating worksheets, writing formulas, creating charts, working with the web feature, hyperlinks and the integration feature, creating queries, templates, and using macros and complex problem solving. Accuplacer scores: RC-56;A-32;SS-70; High School diploma or GED; Keyboard 35 wpm/5 errors; math/ calculator proficiency; one year documented office experience.

BO 922 Comprehensive Microsoft Access**0 cr. hrs. 105 periods**

This course provides comprehensive instruction in Microsoft Access. The course includes procedures for creating, querying, and maintaining databases, and sharing data among applications through reports and forms, and data access pages. Also included is an introduction of new features such as: automatic error checking, using smart tags, importing and linking SharePoint lists to Access databases, setting macro security, and changing the font size for SQL queries.

BO 927 Comprehensive MS PowerPoint**0 cr. hrs. 60 periods**

This module provides comprehensive instruction for PowerPoint. The module includes instruction on how to: use design templates to create presentations; use the outline tab and clip art to create a slide show; create a presentation to view on the Web; use visuals to enhance slide shows; modify visual elements and presentation formats; use collaboration features to deliver and schedule online broadcasts; work with Macros and Visual Basic for Applications (VBA); create self-running presentations; use the Microsoft Office online Web site to import files. Same as Administrative Assistant program.

BO 929 Comprehensive Microsoft Word**0 cr. hrs. 120 periods**

This course provides comprehensive instruction in Microsoft Word. The course includes procedures for creating documents such as: letters; flyers; research papers; resumes and cover letters; web pages; documents with tables, charts or watermarks; mail merge documents; newsletters; online forms; working with macros and Visual Basic for Applications (VBA); master documents, an Index, a Table of Contents, and XML; integration features and collaboration features. High School diploma or GED; Keyboard 35 wpm/5 errors; Accuplacer scores: RC-56, A-32, SS-70; One year documented Math/Calculator proficiency.

BO 991 Office Practice Externship**0 cr. hrs. 60 periods**

Synthesize skills learned in the classroom to the office environment. Includes the application of office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general practices.

BO 991A Legal Office Externship**0 cr. hrs. 60 periods**

Synthesize skills learned in the classroom to the legal office environment. Includes the application of office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general legal office practices.

BO 992 Medical Office Externship**0 cr. hrs. 120 periods**

Synthesize skills learned in the classroom to the medical office environment. Includes the application of medical office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general practices.

BO 992A Accounting Assistant Externship**0 cr. hrs. 120 periods**

Synthesize skills learned in the classroom to the accounting office environment. Includes the application assistant office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general accounting assistant practices.

BO 992B Medical Coding Externship**0 cr. hrs. 120 periods**

Synthesize skills learned in the classroom to the medical office environment. Includes the application of medical coding and office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general practices.

BO 993 Medical Transcription Externship**0 cr. hrs. 240 periods**

Synthesize skills learned in the classroom to the medical office environment. Includes the application of medical transcription and office skills that utilize work ethics, customer service, communication, peer and supervisor relationships, and general practices.

Department of Transportation

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

DT 700 Pre-Apprenticeship in Highway Construction Trades**0 cr. hrs. 185 periods**

Overview of highway construction trades. Includes training in automotive mechanics, welding, machining, construction, applied mathematics, Occupational Safety and Health Act (OSHA), safety, flagging certification, basic computer and employability skills. Also includes research in work and personal preferences in highway construction trades.

Information: Provides the student with experience in highway construction trades in order to make an informed choice as to which area of the industry to choose for employment.

Food Service

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

FS 705 Sanitation and Safety Fundamentals**0 cr. hrs. 60 periods**

Introduction to kitchen safety and sanitation. Includes health department regulatory guidelines, use of chemicals, procedures for kitchen housekeeping and maintenance.

FS 720 Tools, Utensils, and Equipment**0 cr. hrs. 75 periods**

Introduction to the identification, use and care for basic equipment and tools within the kitchen. Includes use of kitchen scales for weighing and measuring of food products. Includes the use of standardized recipes, portion and quality control. Also includes the identification, safe use and care of cutlery used in commercial kitchen.

FS 725 Cold Foods-Salads and Dressings**0 cr. hrs. 90 periods**

Introduction to the identification and preparation of fruits and vegetables utilizing basic preparation techniques. Includes basics of salad dressing preparation including emulsions and vinaigrettes. Also includes production and presentation of cold salads.

FS 735 Introduction to Hot Foods**0 cr. hrs. 70 periods**

Introduction to the production of hot food items. Includes fundamentals of vegetable, starch, and breakfast preparation methods. Also includes identification and use of commercial cooking equipment and cutlery.

FS 745 Hot Foods-Vegetables, Starches, Pastas, Grains**0 cr. hrs. 60 periods**

Introduction to the identification, selection and preparation of vegetable, and starch production. Includes practice in various moist and dry heat cooking methods.

FS 760 Hot Foods-Stocks, sauces, and Soups**0 cr. hrs. 80 periods**

Introduction to stocks, sauces and soups. Includes classical stocks, mother sauces, roux, liaison, cream and broth soups, and cooking techniques.

FS 765 Culinary Principles- Terminology, Record Keeping & Service**0 cr. hrs. 40 periods**

Introduction to culinary principles. Includes terminology within the commercial kitchen, concepts for using standardized recipes, basic rules of table service, and service procedures. Also includes food ordering, inventory and recordkeeping methods.

FS 770 Hot Foods-Introduction to Meat and Seafood Cookery**0 cr. hrs. 60 periods**

Introduction to basic techniques of meat and seafood cookery. Includes sanitation standards and processing guidelines for safe handling of meat products.

FS 775 Record Keeping/Menu Planning B**0 cr. hrs. 40 periods**

In contrast to FS765, this module teaches the student proper record keeping methods for maintaining par levels and ordering of foodstuffs. Proper use of standardized recipes and nutritional balance of menu items is also presented.

FS 845 Knife Skills**0 cr. hrs. 60 periods**

Advanced knife skills development and cuts used in food preparation. Includes practice in the identification and preparation of fruits and vegetables utilizing basic preparation techniques.

FS 850 Hot Foods-Breakfast Cookery**0 cr. hrs. 30 periods**

Introduction to Breakfast Cookery. Includes preparation of eggs, breakfast meats, cereals, pancakes, potatoes. Also includes discussion of "mise en place" for breakfast setup.

FS 865 Culinary Principles: Advanced Record Keeping**0 cr. hrs. 60 periods**

Continuation of record keeping concepts. Includes menu development, budgeting principles, menu and recipe costing, calculation of food cost, and inventory control.

FS 885 Hot Foods-Intermediate Meat and Seafood Cookery**0 cr. hrs. 60 periods**

Continuation of meat and seafood cookery skills. Includes the development of meat and seafood cookery techniques. Includes inspection and grading standards. Also includes discussion of primal and retail meat cuts.

FS 900 Food Service Externship**0 cr. hrs. 60 periods**

A supervised cooperative work program for students enrolled in the Center for Training and Development Food Service training. Instructor coordinates work experience with students and participating employers.

FS 901 Sanitation and Regulatory Issues**0 cr. hrs. 30 periods**

Overview of specific causes of foodborne illnesses and types of bacteria and viruses. Includes precaution measures, Hazard Analysis and Critical Control Point (HACCP) analysis, and proper storage, cooking, and holding temperatures for potentially hazardous food items.

FS 910 Bakery-Quick Breads**0 cr. hrs. 120 periods**

Introduction to the practice of bakery operations and production of quick breads. Includes planning and scheduling for bakeshop production. Also includes an overview of safety and sanitation, bakery vocabulary, and ingredients.

FS 915 Tools and Equipment**0 cr. hrs. 0-98 periods**

This module provides comprehensive knowledge of the tools and equipment used within the commercial kitchen. Students are required to achieve proficiency with kitchen weights and measurements. Prerequisite: Accuplacer scores: Reading Comp-31; Arithmetic-34; Sentence Skills-35

FS 920 Bakery-Yeast Doughs**0 cr. hrs. 175 periods**

Introduction to the practice of bakery operations and production of yeast dough. Includes planning and scheduling for bakeshop production. Also includes an overview of safety and sanitation, bakery vocabulary, and ingredients.

FS 925 Cold Foods-Garde Manger Skills**0 cr. hrs. 130 periods**

Advanced practice and skills for cold kitchen production. Includes garnish techniques, hors d'oeuvres, appetizers, plate presentation and centerpieces. Also includes speciality and entree salad production.

FS 930 Bakery-Cakes, Cookies, and Pies**0 cr. hrs. 160 periods**

Introduction to practice of bakery operations and production of cakes, pies, and cookies. Includes planning and scheduling for bakeshop production. Also includes discussion of safety and sanitation, bakery vocabulary, and ingredients.

FS 970 Bakery-Sauces and Fillings**0 cr. hrs. 30 periods**

Introduction to sauces and fillings used for bakery and pastry production. Includes discussion of thickening agents, special considerations for cooking, and holding of cream fillings.

FS 985 Hot Foods-Advanced Meat and Seafood Cookery**0 cr. hrs. 135 periods**

Fabrication of meat and advanced seafood preparation. Includes the development of meat and seafood cookery skills. Also includes meat carving techniques.

FS 997 Food Service Pre-Apprenticeship Externship**0 cr. hrs. 160 periods**

A supervised cooperative work program for students enrolled in Center for Training and Development Food Service Pre Apprenticeship certificate. Instructor coordinates work experience with students and participating employers. Work hours may be applied toward requirements of Journeyman Cook apprenticeship through the American Culinary Federation.

Health Information Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HI 501 Introduction to Health Care and Public Health in the U.S.**0 cr. hrs. 15 periods**

A survey of how health care and public health are organized and services delivered in the U.S. Includes public policy, relevant organizations and their interrelationships, professional roles, legal and regulatory issues, and payment systems. Also includes health reform initiatives in the U.S.

HI 502 Culture of Health Care**0 cr. hrs. 15 periods**

Overview for individuals not familiar with health care, contents address job expectations in health care settings. Also includes how care is organized inside a practice setting, privacy laws, and professional and ethical issues encountered in the workplace.

HI 503 Terminology in Health Care and Public Health Settings**0 cr. hrs. 15 periods**

Explanation of specific terminology used by workers in health care and public health. Includes the use of health care terminology in health care technology roles and electronic health records.

Information: Note: This is NOT a course in data representation or standards.

HI 504 Introduction to Information and Computer Science**0 cr. hrs. 15 periods**

Introduction for students without an IT background, provides a basic overview of computer architecture; data organization, representation, and structure; structure of programming languages; and networking and data communication. Includes basic terminology of computing.

HI 505 History of Health Information Technology in the U.S.**0 cr. hrs. 15 periods**

Traces the development of information technology (IT) systems in health care and public health beginning with the experiments of the 1950's, 1960's and culminating in the Health Information Technology for Economic and Clinical Health Act (HITECH) Act. Introduces the concept of meaningful use.

HI 506 Health Management and Information Systems**0 cr. hrs. 30 periods**

A theory component specific to health care and public health applications. Introduction to health information technology (IT) standards, health-related data structures, software applications, and enterprise architecture in health care and public health organizations.

HI 507 Fundamentals of Health Workflow Process Analysis & Redesign**0 cr. hrs. 45- periods**

Fundamentals of health workflow process analysis and redesign, as a necessary component of complete practice automation, includes topics of process validation and change management.

Information: This entire Component is estimated to require 20 total contact/instructional hours plus 40-60 additional hours of independent or team work, depending on the learning activities and assessments used within each unit.

HI 508 Usability and Human Factors**0 cr. hrs. 30 periods**

Discussion of rapid prototyping, user-centered design and evaluation, usability; understanding effects of new technology and workflow on downstream processes. Includes facilitation of a unit-wide focus group or simulation.

HI 509 Introduction to Project Management**0 cr. hrs. 20 periods**

Overview of project management tools and techniques. Includes how to create and follow a project management plan.

HI 510 Planning, Management, and Leadership for Health IT**0 cr. hrs. 20 periods**

A practical experience with a laboratory component, addressing approaches to assessing, selecting, and configuring EHRs to meet the specific needs of customers and end-users.

HI 511 Professionalism & Customer Service in the Health Environment**0 cr. hrs. 15 periods**

Development of skills necessary to communicate effectively across the full range of roles that will be encountered in health care and public health settings. Includes ethical and cultural aspects of communication.

HI 512 Quality Improvement**0 cr. hrs. 20 periods**

Introduction to health IT concepts and practice workflow redesign as instruments of quality improvement. Includes establishing a culture that supports increased quality and safety. Also includes approaches to assessing patient safety issues and implementing quality management and reporting through electronic systems.

HI 513 Working with Health IT Systems**0 cr. hrs. 30 periods**

Laboratory work with simulated systems or real systems with simulated data. Includes individuals experiencing the role of practitioners using these system and what is happening under the hood. Includes experience with threats to security to appreciate the need for standards, high levels of usability, and how errors can occur. Also includes hands-on experience in computer labs and on-site in health organizations.

HI 514 Working in Teams**0 cr. hrs. 15 periods**

Concepts for individuals specifically contemplating careers in public health agencies; and overview of specialized public health applications such as registries, epidemiological databases, biosurveillance, and situational awareness and emergency response. Includes information exchange issues specific to public health.

HI 515 Public Health IT**0 cr. hrs. 30 periods**

Concepts for individual specifically contemplating careers in public health agencies; an overview of specialized public health applications such as registries, epidemiological databases; biosurveillance, and situational awareness and emergency response. Includes information exchange issues specific to public health.

HI 516 Networking and Health Information Exchange**0 cr. hrs. 20 periods**

More in-depth analysis of data mobility including the hardware infrastructure (wires, wireless, and devices supporting them), the ISO stack, standards, Internet protocol, federations and grids. Includes the Nationwide Health Information Network (NHIN) and other nationwide approaches.

HI 517 Training and Instructional Design**0 cr. hrs. 30 periods**

Overview of learning management systems, instructional design software tools, teaching techniques and strategies, evaluation of learner competencies, and maintenance of training records. Includes measurements of training program effectiveness.

HI 518 Installation and Maintenance of Health IT Systems**0 cr. hrs. 30-45 periods**

Concepts and techniques to install and maintain health IT systems. Includes testing prior to implementation and the principles underlying system configuration. Also includes hands-on experiences in computer labs and on-site in the health organizations.

HI 519 Configuring EHRs**0 cr. hrs. 45 periods**

A practical, hands-on experience with a laboratory component configuring an Electronic Health Record. Includes how to assess, select, and configure EHRs to meet the specific needs of customers and end-users.

HI 520 Special Topics on Vendor Specific Systems**0 cr. hrs. 15 periods**

Overview of the most popular vendor systems, highlighting the features of each as they would relate to practical deployments. Includes differences between the systems.

Health Occupations

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

HO 818 Anatomy, Physiology, and Microbiology**0 cr. hrs. 150 periods**

Introduction to the systems of the human body. Includes body organization, anatomy and physiology of body systems, human development and genetics, and microbiology.

HO 819 Nursing Care Fundamentals**0 cr. hrs. 90 periods**

This course is designed to teach drug dose calculation to beginning practical nursing students to introduce students to the basic skills required to administer medications via various routes and to prepare students with the study skills and test taking skills necessary to be successful in a practical nursing program. The course uses lecture, calculation practice and skills lab practice. The theoretical and practical preparation course includes classroom and skills instruction.

Recommendation: Complete HO 818 Anatomy, Physiology, and Microbiology prior to registering for this course.

HO 855 Practical Nurse Proficiency Evaluation**0 cr. hrs. 150 periods**

This program is designed to provide the nursing student who has completed two or more semesters of a registered nursing program or an equivalent program with a practical nurse certificate. Students must demonstrate theoretical competence and competence performing nursing skills in a nursing skills laboratory and hospital clinical setting.

HO 928 A&P: Urinary and Reproductive**0 cr. hrs. 55-100 periods**

Components and characteristics of urinary and reproductive surgery. Includes the structure, function, and regulatory mechanisms of the urinary system. Also includes the structure and function of the male and female reproductive systems.

Job Success

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

JS 720 Employment and College Success Skills

0 cr. hrs. 30-60 periods

Introduction to skills needed to be successful in both college and the workplace. Includes time management, study and test taking skills, connecting to college and community resources, budgeting and fiscal management, job search skills, differences in work environments, life management, and diversity awareness.

Nursing Assistant

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

NA 810 Nursing Assistant

0 cr. hrs. 120 periods

Introduction to Nursing Assisting. Includes body systems and common diseases, basic nursing assisting skills, providing client, restorative, long-term, and home health care; and certification requirements.

Prerequisite(s): Accuplacer: Reading 40, Arithmetic 21, Sentence Skills 35.

Practical Nursing

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

PN 861 Introduction to Practical Nursing

0 cr. hrs. 220 periods

Introduction to the Practical Nurse (PN) scope of practice and the nursing process. Includes the concepts, processes, principles and theory of nursing practice for the PN. Includes foundation skills, such as ethical and legal considerations, and health and illness throughout the life span, with an emphasis on the application of critical thinking in nursing practice. Also includes the application of concepts in the Skills Lab and clinical work.

Prerequisite(s): HO 818, HO 819 or equivalency: Accuplacer score of R-31, M-34, S-46.

Recommendation: Completion of a Nurse assistant class and Anatomy and Physiology class, and Math calculations class satisfies prerequisites.

PN 872 Practical Nursing A

0 cr. hrs. 220 periods

Concepts and skills in medical-surgical nursing care. Includes interventions, pharmacology, pathophysiology, lab and diagnostics related to fluid and electrolyte antacid-base balance and shock, the hematopoietic, neurological, integumentary, gastrointestinal and respiratory systems. Includes an emphasis in utilizing the nursing process at the Practical Nurse (PN) level of care.

Prerequisite(s): PN 861.

PN 874 Practical Nursing B

0 cr. hrs. 220 periods

Continuation of PN 872. Includes skills for medical-surgical nursing care interventions, pharmacology, pathophysiology, lab and diagnostics related to the musculoskeletal, immune, cardiovascular, renal, endocrine, sensory and reproductive systems. Also includes an emphasis on utilizing the nursing process at the Practical Nurse (PN) level of care.

Prerequisite(s): PN 872.

PN 882 Maternal-Child Nursing for Practical Nurse

0 cr. hrs. 120 periods

This module includes theory, skills labs, and clinical assignments. The student will learn nursing care of the client in the prenatal, labor, birth and postpartum phases. The student will also learn the care of preterm, term and and post term newborns and the newborn with congenital malformations.

Prerequisite(s): NA810, HO818, HO819, PN861, PN 872, PN874.

PN 887 Pediatric Nursing for the Practical Nurse**0 cr. hrs. 120 periods**

This module includes theory, skills labs, and clinical assignments. The student will learn to provide nursing care to the child with a sensory, neurologic, musculoskeletal, respiratory, cardiovascular, blood or blood-forming organ, lymphatic system, gastrointestinal, genitourinary, skin disorder, metabolic disorders or conditions, communicable diseases, and emotional or behavioral disorders.

Prerequisite(s): NA810, HO818, HO819, PN 861, PN 872, PN874, PN 882.

PN 890 Transition to Practice for the Practical Nurse**0 cr. hrs. 120 periods**

This module includes theory, skills labs and clinical assignments and a comprehensive final exam. The student will learn about the role of the board of nursing, scope of practice for the LPN, leadership, NCLEX review, applications for licensure, the employment process, community nursing services, cultural diversity, alternative therapies, malpractice issues, and stress management.

Prerequisite(s): NA810, HO818, HO819, PN861 PN 872, PN 874, PN 882 PN 887.

Surgical Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

SG 900 Introduction to Healthcare**0 cr. hrs. 86 periods**

Introduction to the hospital environment, the history of surgery, and medical terminology as it applies to the health care setting. Includes an introduction to legal, ethical and accountability issues in a health care setting. Also includes personal responsibilities, professional responsibilities, and environmental and work place safety.

Prerequisite(s): HO818 or BIO160IN or BIO201IN.

SG 910 Introduction to Instrumentation, Equipment and Sterilization**0 cr. hrs. 106 periods**

Classifications, names, and components of surgical instruments and equipment used in the surgical setting. Includes microbiology and how it applies in the operating room environment to decontamination, sterilization, and disinfection of instruments and equipment. Also includes the computer as a communication tool and technical device; and principle concepts of robotics, physics and electricity in a healthcare setting.

Prerequisite(s): HO818 or BIO160IN or BIO201IN.

SG 920 Anesthesia and Surgical Pharmacology**0 cr. hrs. 35 periods**

Introduction to the fundamentals of pharmacology and pharmacy practice. Includes pharmacological terminology, types of anesthesia, drug origins, methods of administration, and drug handling techniques. Also includes basic math calculations, safe and accurate drug preparation, and distribution of sterile and non-sterile medications. Emphasis is on the surgical technologist's role in drug packaging, administration, labeling, and classification in routine and emergency situations.

Prerequisite(s): HO818 or BIO160IN or BIO201IN.

SG 930 Patient Care**0 cr. hrs. 23 periods**

Examination of the entire perioperative experience of the patient undergoing surgery. Includes pre-admission, transportation, and positioning. Also includes considerations for special populations, such as geriatric, pediatric, diabetic, and physically challenged patients. Also includes sentinel events in the operating room, perceptions of death and dying, the needs of dying patients, and coping skills for the patient's family.

Prerequisite(s): HO818 or BIO160IN or BIO201IN.

SG 950LB Surgical Lab Procedures I**0 cr. hrs. 110 periods**

Classroom presentations and laboratory demonstrations of surgical procedures. Includes a review of anatomy and related pathophysiology, an introduction to the operating room using mock lab procedures, and an introduction to pediatric and adult surgery. Also includes basic ear, nose, throat and OB/GYN procedures based on current industry standards. The student will work in the laboratory performing set-ups, practicing procedures, and learning standards of teamwork and organization. Prerequisite: HO818 or BIO160IN or BIO201IN.

SG 960LB Surgical Lab Procedures II**0 cr. hrs. 165 periods**

Classroom presentations and laboratory demonstrations of surgical procedures, such as general and genitourinary procedures. Includes concepts of robotic use in surgery based on current industry standards. Also includes a review of anatomy; and diseases and disorders of the respiratory system, digestive system, urinary system, endocrine system, and male and female reproductive systems. Classroom presentations on all specialties are included.

Prerequisite(s): SG950LB.**SG 970LB Surgical Lab Procedures III****0 cr. hrs. 125 periods**

Classroom presentations and laboratory demonstrations of surgical procedures, including a review of the operating room and surgery using mock lab procedures. Includes orthopedic, oral and maxillofacial, plastic and reconstructive, ophthalmic, cardiothoracic, peripheral vascular, and neurosurgical procedures based on current industry standards. Also includes a review of anatomy, and diseases and disorders of the integumentary, musculoskeletal, nervous, and cardiovascular systems. Classroom presentations on all specialties are included.

Prerequisite(s): SG960LB.**SG 990 Surgical Technology Externship I****0 cr. hrs. 250 periods**

Assisting surgical team members with daily preoperative and postoperative duties of a student surgical technologist while under the direct supervision of a staff surgical technologist and a registered nurse. Includes one-on-one training in a facility providing surgical services, progressing through rotations into the first scrub role for minor procedures and the second scrub role in major cases. At the completion of the externship rotations the student will be scrubbing in the first scrub role for most procedures when appropriate.

Prerequisite(s): SG970LB.**SG 995 Surgical Technology Externship II****0 cr. hrs. 276 periods**

Assisting surgical team members with daily preoperative and postoperative duties of a student surgical technologist while under the direct supervision of a staff surgical technologist and a registered nurse. Includes one-on-one training in a facility providing surgical services, progressing through rotations into the first scrub role for minor procedures and the second scrub role in major cases. At the completion of the externship rotations the student will be scrubbing in the first scrub role for most procedures when appropriate. Also includes a review in preparation for the National Surgical Technology Certification Exam.

Prerequisite(s): SG990.

Transportation & Logistics

For courses numbered 098, 198, 298, see "Topic Courses" on page 221

TD 600 Commercial Driver's License Permit Preparation - ESL Level 1**0 cr. hrs. 1-80 periods**

Overview and preparation for the Commercial License Permit with English as a Second Language component. Includes general knowledge of USDOT regulations, hours of service, license requirements, and Class A License with endorsements: Tank, Doubles, and Triples to obtain a Commercial Driver's License permit.

TD 601 Commercial Driver's License Permit Preparation-ESL Level 2**0 cr. hrs. 1-160 periods**

Continuation of TD 600. Overview and preparation for the Commercial Driver's License Permit with English as a Second Language component. Includes general knowledge of USDOT regulations, hours of service, license requirements, and Class A License with endorsements: Tank, Doubles, and Triples to obtain a Commercial Driver's License permit.