# Course Numbering System and Prerequisites

Courses numbered from 001-099 are those unique to the community college, are considered developmental in nature, are not anticipated to be 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: New 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 http://www.azsunsystem.com/

## Sample course listing:

<table>
<thead>
<tr>
<th>ACC</th>
<th>101</th>
<th>Financial Accounting</th>
<th>3 cr. hrs.</th>
<th>3 cr. periods</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>IN</th>
<th>Integrated lecture/lab</th>
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<tbody>
<tr>
<td>LB</td>
<td>Lab</td>
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<td>LC</td>
<td>Clinical Lab</td>
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<td>LS</td>
<td>Skills Lab</td>
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## Listing of Course Prefixes

<table>
<thead>
<tr>
<th>Accounting</th>
<th>ACC</th>
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<tbody>
<tr>
<td>Administration of Justice</td>
<td>AJS</td>
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<tr>
<td>Agriculture</td>
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<td>American Indian Studies</td>
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<td>Animal Science</td>
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<td>Anthropology</td>
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<td>Art</td>
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<td>Art for Personal Development</td>
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<td>Asian Pacific Americans</td>
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<td>Avionics Technician Training</td>
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<td>Biology</td>
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<td>Career and Technical Education</td>
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<td>Child Development Associate</td>
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<td>Chinese</td>
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<td>Clinical Research Coordinator</td>
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<td>Finance</td>
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<td>Food Science and Nutrition</td>
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<td>Foundations for Personal Change</td>
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<td>French</td>
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<td>Game Design</td>
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<td>General Technical Writing</td>
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Listing of Course Prefixes

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<td>Writing</td>
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Accounting

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ACC 100 Practical Accounting Procedures
3 cr. hrs. 3 periods (3 lec.)
Introduction to accounting systems for small businesses. Includes an introduction to accounting, accounting equation, procedures for controlling cash, payroll accounting, special journals, computer accounting, and ethical issues in the business process.
Offered: Fall, Spring, Summer.

ACC 101 Financial Accounting SUN# ACC 2201
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.
Information: Students planning to transfer to the Eller Business College should take ACC 101 the semester prior to their application semester.
Offered: Fall, Spring, Summer.

ACC 102 Managerial Accounting SUN# ACC 2202
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 101.
Recommendation: Completion of MAT 122 or higher before enrolling in this course.
Offered: Fall, Spring, Summer.

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, and computerized payroll systems and payroll projects.
Prerequisite(s): ACC 100 or 101.
Offered: Fall, Spring.

ACC 160 Basic Tax Preparation
3 cr. hrs. 3 periods (3 lec.)
Basic skills in tax preparation. Includes volunteer assistance techniques and procedures; taxable revenues, expenses, and appropriate line items on various forms; completion and discussion of tax returns with clients; additional federal tax issues and forms on individual tax returns; and training in current tax preparation software.
Prerequisite(s): ACC 101.
Information: Students must pass an Internal Revenue Service (IRS) volunteer tax preparer certification exam and perform a minimum of 18 service learning hours at a community VITA site to successfully complete this course.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

ACC 173 Government and Not-For-Profit Accounting
3 cr. hrs. 3 periods (3 lec.)
Accounting practices used in governmental units, and not-for profit organizations. Includes basic characteristics of fund accounting, functions of governmental accounting, budgetary process, basic fund accounting system, financial reporting objectives, and government-wide financial statements.
Prerequisite(s): ACC 101.
Offered: Spring

ACC 190 Internship in Accounting
3 cr. hrs. 15 periods (15 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.
Offered: May not be offered this year, check class schedule.

ACC 200 Computerized Accounting I
4 cr. hrs. 4 periods (4 lec.)
Fundamental accounting applications using commercial applications software. Includes the computer operating system, commercial accounting program modules, accounting projects, electronic spreadsheet as the accounting tool, and accounting information on the Internet.
Prerequisite(s): ACC 100 or 101.
Offered: Fall, Spring.
ACC 201 Intermediate Accounting I
3 cr. hrs. 3 periods (3 lec.)
Comprehensive coverage of financial accounting topics. Includes environment of accounting, accounting information system, present value applications to accounting problems, cash control, receivables and investments, inventory valuation methods, tangible fixed assets, current and long-term liabilities, and intangible assets.
Prerequisite(s): ACC 102.
Offered: Fall, Spring.

ACC 202 Intermediate Accounting II
3 cr. hrs. 3 periods (3 lec.)
Continuation of ACC 201. Includes stockholder’s equity, long and short term liabilities, income taxes, pension plans, leases, and accounting changes, statement of cash flow, and full disclosure in financial reporting. Also includes continual integration of theory and practice in the accounting treatment of investments.
Prerequisite(s): ACC 201.
Offered: Fall, Spring.

ACC 203 Cost Accounting
3 cr. hrs. 3 periods (3 lec.)
Analysis of cost data for management planning, coordination, and control. Includes cost accounting fundamentals, costing systems, tools for planning and control, and cost information for decision making.
Prerequisite(s): ACC 102.
Offered: Fall.

ACC 204 Individual Tax Accounting
4 cr. hrs. 4 periods (4 lec.)
Principles of accounting for taxes on individuals. Includes federal tax laws for individuals, gross income, deductions and losses, special tax computations, property transactions, and income tax preparation and related forms.
Prerequisite(s): ACC 100 or 101.
Offered: Fall, Spring.

ACC 210 Computerized Accounting II
3 cr. hrs. 3 periods (3 lec.)
Continuation of ACC 200 using advanced accounting applications and commercial applications software. Includes working with an accounting practice set, advanced accounting spreadsheets, and accounting software research on the Internet.
Prerequisite(s): ACC 200.
Offered: Fall, Spring.

ACC 215 QuickBooks Computer Accounting
3 cr. hrs. 3 periods (3 lec.)
Use of current QuickBooks software to set up and maintain accounting records for a small business. Includes modular accounting involving accounts receivable, accounts payable, inventory, and payroll features.
Prerequisite(s): ACC 100 or 101.
Offered: Fall, Spring, Summer.

ACC 250 Certified Bookkeeper Review
3 cr. hrs. 3 periods (3 lec.)
Preparation for the American Institute of Professional Bookkeepers (AIPB) Certified Bookkeeper examination and review of accounting theory and practical bookkeeping skills. Includes the certified bookkeeper program; accruals, deferrals, and the adjusted trial balance; correction of accounting errors and the bank reconciliation; payroll; depreciation; inventory; and internal controls and fraud prevention.
Prerequisite(s): ACC 100 or 101.
Offered: Fall.

ACC 255 Business Admissions Exam Review
1 cr. hrs. 1 periods (1 lec.)
Review of basic accounting systems including the accounting cycle, identification of events that characterize economic activity, and the collection and communication of financial activity. Reexamines recording and analyzing accounting data; financial reports; internal control of assets; and the measurement and reporting of liabilities and owner’s equity. Also includes principles of business, finite math, basic probability, summation, compound interest, random variables and random sampling.
Prerequisite(s): ACC 101 or either MAT 172 or MAT 173.
Recommendation: Students have a "B" or better in prerequisites due to rigorous program entrance requirements.
ACC 102 and math requirements should be taken in the semester before you sit for the Eller School of Business Entrance Exam.
Information: Prerequisites or consent of instructor is required before enrolling in this course.
Information: May be taken four times for a maximum of four credit hours.
Offered: Fall.
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 101.
Offered: Spring.

ACC 265 Issues in Financial Crime Within Business
1 cr. hrs. 1 periods (1 lec.)
An introduction to investigation procedures to determine financial crimes within businesses. Includes an overview of
financial crimes, conducting internal investigations, examining information to detect possible fraud, interviewing skills,
computer techniques, managing evidence of fraud, coordination with law enforcement agencies, and preventing fraud.
Offered: Spring.

ACC 266 Issues in Financial Crime for Law Enforcement
1 cr. hrs. 1 periods (1 lec.)
An introduction to investigation procedures to determine financial crimes for law enforcement agencies. Includes review of
financial crimes, conducting investigations to determine financial criminal activity, consumer fraud, computer techniques
and digital evidence, preservation of evidence, and presentation of financial evidence in court.
Offered: May not be offered this year, check class schedule.

ACC 267 Computer Fraud Detection
1 cr. hrs. 1 periods (1 lec.)
Overview of the fundamentals of computer fraud examination. Includes the examination methodology used within the
field, Internet and e-commerce fraud, evidence gathering, prevention, and security.
Prerequisite(s): ACC 260.
Offered: May not be offered this year, check class schedule.

Administration of Justice
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

AJS 115 Criminal Procedures
3 cr. hrs. 3 periods (3 lec.)
Overview of the system used in the United States to administer criminal cases. Includes implications for civil rights, the
police process, the prosecuting attorney, the defense attorney, courts, grand jury, trial jury, coroner-medical examiner,
judicial process, and the trial, and its aftermath.
Offered: Fall, Spring.

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.
Recommendation: Completion of AJS 101 before enrolling in this course.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.
AJS 150 Defensive Tactics for Law Enforcement
3 cr. hrs. 3 periods (3 lec.)
Force tactics as they apply to law enforcement. Includes the use of verbal and physical skills to accomplish control with a minimum potential of injury to the officer or subject. Also includes handcuffing, impact weapons, and handgun retention.
Offered: Fall, Spring.

AJS 170 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.
Offered: Spring.

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.
Offered: Fall, Spring, Summer.

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.
Information: AJS 109 or concurrent enrollment or consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Spring.

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.
Recommendation: Completion of AJS 101 before enrolling in this course.
Offered: Fall, Spring.

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.
Prerequisite(s): AJS 101.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Summer.

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.
Offered: Fall.

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 required before enrolling in this course.
Offered: Fall, Spring.
AJS 280 Terrorism in the 21st Century
3 cr. hrs. 3 periods (3 lec.)
Exploration into the definition, history, cause, and goals of terrorism. Includes identification of terrorists and their motivations and examination of tactics used by terrorists in pursuit of their goals. Also includes methods used to combat terrorism including intelligence collection, security measures, diplomacy, legal and political responses.
Offered: Fall, Spring.

AJS 290 Administration of Justice Field Experience
3 cr. hrs. 15 periods (15 lab)
Participation in community administration of justice agencies. Includes experience in the practical application of classroom instruction. Also includes biweekly seminars to discuss theory and practice pertinent to the agency experience.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken two times for a maximum of six credit hours.
Offered: Fall, Spring.

Agriculture

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

AGR 100 Introduction to Agribusiness
3 cr. hrs. 3 periods (3 lec.)
Overview of agricultural business industries and careers. Includes history of agribusinesses, business planning and management, and financial and economic principles of agriculture.
Offered: Fall, Spring.

AGR 101 Introduction to Agriculture Science
3 cr. hrs. 3 periods (3 lec.)
Overview of topics, careers and practices in agriculture science. Includes food safety, biotechnology, and environmental and natural resources sciences. Also includes ethics, nutrition and disease as they relate to the agricultural sciences.
Offered: Spring.

AGR 102 Introduction to Plants, Soils and Crops
3 cr. hrs. 5 periods (2 lec., 3 lab)
Overview of plant systems. Includes taxonomy, anatomy and physiology, and reproduction. Also includes the history of agriculture, and principles of crop and pest management.
Offered: Summer.

American Indian Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

AIS 101 Introduction to American Indian Studies I
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.
Offered: Fall, Spring.

Animal Science

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ANS 102 Introduction to Animal Industry
3 cr. hrs. 5 periods (2 lec., 3 lab)
Overview of livestock and poultry industries and practices. Includes production, marketing and distribution. Also includes application of scientific principles to health, behavior, nutrition, reproduction and performance.
Offered: Fall, Spring, Summer.
ANS 170 Equine Anatomy and Physiology
3 cr. hrs. 5 periods (2 lec., 3 lab)
Basic instruction in the structure and function of the horse. Includes an introduction to the scientific method as it relates to the horse, anatomy and physiology of the equine species, and basics of conformation analysis.
*Information: Preparers the student for further studies in equine science.*
Offered: Spring, Summer.

ANS 171 Horse Care and Management
3 cr. hrs. 5 periods (2 lec., 3 lab)
The care and management of the horse as a domestic companion animal. Includes basic veterinary requirements, feeds and feeding, stabling, and preventive health care.
Offered: Fall.

ANS 172 Horse Health I
3 cr. hrs. 3 periods (3 lec.)
Basic instruction in equine animal science. Includes equine conformation disorders, basic equine nutrition and disorders of nutrition, parasitology, infectious diseases, and injury induced lameness.
Offered: Spring.

ANS 173 Horse Health II
3 cr. hrs. 3 periods (3 lec.)
Advanced topics in equine animal science. Includes the anatomy and physiology of the equine nervous, endocrine, and reproductive system; reproductive physiology of the mare and the stallion; breeding management practices; foaling and the neonatal period; foal management; advanced techniques in equine reproduction; business management for the mare owner and the stallion service manager.
*Prerequisite(s):* ANS 172.
Offered: Fall.

ANS 195 Introduction to Research in Animal Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Introduction to the methods of research in Animal Science. Includes scientific laboratory procedures, experimental design, scientific writing, scientific ethics, and current research in working laboratories.
*Information: Three credit hours of Animal Science and consent of instructor are required before enrolling in this course. Information: 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.*
Offered: Fall, Spring, Summer.

ANS 196 Independent Study in Animal Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Introductory study of a particular Animal Science subject or subjects to hone skills while working in an independent format.
*Information: Three credit hours of Animal Science and consent of instructor are required before enrolling in this course. Information: 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.*
Offered: Fall, Spring, Summer.

ANS 213 Animal Genetics
3 cr. hrs. 3 periods (3 lec.)
Principles of genetics. Includes classical, molecular and population genetics.
*Prerequisite(s):* BIO 100IN or higher.
Offered: Fall.

ANS 215 Animal Anatomy and Physiology
3 cr. hrs. 5 periods (2 lec., 3 lab)
Anatomy and physiology of domestic animals. Includes structure and function of body systems. Also includes a review of basic cellular biology.
*Prerequisite(s):* BIO 100IN or higher.
Offered: Spring.

ANS 276 Equine Conformation and Performance
3 cr. hrs. 5 periods (2 lec., 3 lab)
Physical and functional structure and movement of the horse. Includes lecture, video and live animal evaluations based on current industry standards, rules, and regulations of breed associations.
Offered: Fall.
ANS 290 Animal Science Internship
1-4 cr. hrs. 5-20 periods (5-20 lab)
Internship and work experience in an animal science field or laboratory. Includes setting, achieving, and evaluating goals for hands-on learning experiences in animal sciences. Also includes development of skills and knowledge needed to work in an animal science field or laboratory.
Information: Six credit hours of Animal Science and consent of instructor are required before enrolling in this course.
Offered: Spring.

ANS 295 Independent Research in Animal Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Experience in scientific laboratory research.
Prerequisite(s): ANS 195.
Information: Nine credit hours of Animal Science and consent of instructor are required before enrolling in this course.
Information: Specific content to be determined by student and instructor.
Offered: Fall, Spring, Summer.

ANS 296 Independent Study in Animal Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Advanced study of a particular Animal Science subject or subjects to hone skills while working in an independent format.
Information: Consent of instructor is required before enrolling in this course.
Information: 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.
Offered: Fall, Spring, Summer.

ANT 101 Human Origins and Prehistory
3 cr. hrs. 3 periods (3 lec.)
Survey of physical 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.
Offered: Fall, Spring.

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, theory and methods. Also includes an introduction to the comparative study of cultures.
Offered: Fall, Spring.

ANT 105 Humanity and the Environment
3 cr. hrs. 3 periods (3 lec.)
Technical, sociocultural, and political information on environmental science and technology for non-environmental majors. Includes ecosystems, population impacts, hydrological systems, air pollution, and environmental toxins. Also includes current topics such as the greenhouse effect, acid rain, drinking water contamination, toxic waste spills, governmental regulation and enforcement, and future environmental trends.
Corequisite(s): ANT 105LB.
Information: Same as ENV 105.
Offered: Fall.

ANT 105LB Humanity and the Environment Discovery Laboratory
1 cr. hrs. 3 periods (3 lab)
Laboratory exercise and field trip experiences as applied to the relationship between humanity and the environment. Includes examining ecology and biodiversity, healthy-carrying capacity models, and waste by-product and their sources. Also includes designing pollution prevention and sustainable campus/town models, developing increased environmental ethics in relationships to the environment.
Corequisite(s): ANT 105.
Information: This laboratory course satisfies the fourth credit hour of the Biological and Physical Science general education transfer credit if taken along with ANT 105.
Information: Same as ENV 105LB.
Offered: Fall.
ANT 109 Introduction to Global Studies
3 cr. hrs. 3 periods (3 lec.)
Survey of modern globalization. Includes the study of dimensions of globalization, global organizations, global politics, cultural globalization, the global economy, global environmental independence, and global social movements and counter movements. Also includes global interactions and their current effects on the restructuring of cultural, political, and economic institutions worldwide.

Information: Same as GLS 109 and SOC 109.
Offered: Fall, Spring.

ANT 110 Buried Cities and Lost Tribes
3 cr. hrs. 3 periods (3 lec.)
Exploration of the human past. Includes anthropology and its subfields, basics of archaeology, modern humans, origins of domestication, development of social complexity, ranked societies, and states around the world, and archaeology in the modern world.

Information: Same as ARC 110.
Offered: Fall, Spring.

ANT 112 Exploring Non-Western Cultures
3 cr. hrs. 3 periods (3 lec.)
Anthropological survey of non-Western cultures. Includes history and development of cultural anthropology, research methods, and relevant theories of the field. Also includes major cultural characteristics of pre-colonial, non-Western, subsistence cultures; making cross-cultural comparisons and contrasts with the post-colonial era; and considering a global context. Also includes a writing emphasis.

Offered: Fall, Spring, Summer.

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.

Information: Same as HIS 127.
Offered: Fall, Spring, Summer.

ANT 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.

Information: Same as ART 136.
Offered: Fall, Spring.

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 HIS 148.
Offered: Fall, Spring.

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.
Offered: Spring.

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.
Offered: Fall.
ANT 202 Culture and Sexuality
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.
Offered: Fall, Spring.

ANT 203 Race, Ethnicity and Global Citizenship
3 cr. hrs. 3 periods (3 lec.)
Anthropological survey of race, ethnicity, and global citizenship. Includes introduction to studies of race, ethnicity, and citizenship; ethnic and racial identities and group formation; and ethnoracial formations and globalization; and selected case studies.
Offered: May not be offered this year, check class schedule.

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 fossil evidence, environmental and cultural change, primate anatomy and behavior, human genetics, human biology and biocultural interactions. Also includes the use of museum collections, equipment, resources, and facilities of the Archaeology Centre.
Information: Same as ARC 204IN.
Offered: Spring.

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, Paleo-Indians, Archaic people, Hohokam, Mogollon, Anasazi, and other Southwestern cultures, and late prehistoric and historic cultural change.
Information: Same as ARC 205.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

ANT 208 United States-Mexico Borderlands
3 cr. hrs. 3 periods (3 lec.)
Study of the U.S-Mexico borderlands. Includes a historical overview from the border’s origins in the U.S.-Mexico War and the Treaty of Guadalupe Hidalgo and a comprehensive review of the most significant events and issues of the mid-20th Century to the present. Also includes geography, sociodemographics, political economy, migration and transmigrants, media representations, U.S. border policies, enforcement and security/insecurity, violence and peace, gender and sexuality, U.S-Mexico relations, and popular culture.
Information: Same as MAS 208.
Offered: Spring and Fall.

ANT 210 Cultural Anthropology
3 cr. hrs. 3 periods (3 lec.)
Exploration of the study of culture. Includes scientific and humanistic legacies of cultural anthropology, effects of paradigms on research focus and findings, survey of models for analysis, ethnographic studies, and evaluation of models and styles in anthropology.
Prerequisite(s): ANT 102.
Offered: Fall, Spring.

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, language and culture, and language and biology. Also includes language acquisition, language and education, and the history of language and writing.
Offered: Fall.
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 theory in archaeological method and techniques of archaeological excavation; remote sensing, surveying, and mapping; dating methods; archaeological analysis and classification; interpretation of archaeological data; and the role of archaeology in cultural heritage protection and management. Also includes using museum collections, equipment, resources, and facilities of the Archaeology Centre.  
**Prerequisite(s):** ANT/ARC 101 or 110 or 205.  
**Information:** Prerequisite(s) may be waived with consent of instructor.  
**Information:** Same as ARC 225.  
**Offered:** Fall.

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 101, 180.  
**Information:** Same as ARC 250.  
**Information:** Prerequisite(s) may be waived with consent of instructor. Same as ARC 250.  
**Offered:** May not be offered this year, check class schedule.

ANT 253 Death and Grieving Across Cultures  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to death and grieving in various cultures. Includes developmental aspects of death and grieving, world view, near-death experience, 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.  
**Offered:** Spring.

ANT 261 Biological Anthropology  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Interaction of human biology and culture. Includes biological anthropology as natural and social sciences, human genetics, microevolution, macroevolution, human variability, the human phenotype, health, disease, and epidemiology, demography of human populations, and population biology and genetics. Also includes using museum collections, equipment, resources, and facilities of the Archaeology Centre.  
**Prerequisite(s):** ANT/ARC 101.  
**Information:** Prerequisite(s) may be waived with consent of instructor.  
**Information:** Same as ARC 261.  
**Offered:** May not be offered this year, check class schedule.

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.  
**Offered:** Fall.

ANT 267 Introduction to Geographic Information Systems  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Introduction to the technology of geographic information systems (GIS). Includes the evolution of the technology, applications, benefits and costs, characteristics of geographic data, data types, database concepts, and operations and functionality. Also includes hardware, software, implementation, legal issues, and the future of geographic information systems.  
**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.  
**Offered:** Fall.

ANT 275 Archaeological Excavation I  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Introduction to the techniques of archaeological mapping, excavation and recording. Includes field experience in southern Arizona. Also includes using museum collections, equipment, resources and facilities of the Archaeology Centre.  
**Information:** Same as ARC 275.  
**Offered:** Fall.
ANT 276 Archaeological Surveying I
4 cr. hrs. 8 periods (2 lec., 6 lab)
Techniques and methods for recognizing, locating and recording archaeological sites. Includes exploration methods, issues of cultural resource management, instrument skills, map use, and remote sensing applications. Also includes natural resources associated with archaeological sites, application of field techniques, and documentation.
Prerequisite(s): ANT/ARC 180 or concurrent enrollment.
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.
Information: Same as ARC 276.
Offered: Spring.

ANT 277 Archaeological Excavation II
4 cr. hrs. 8 periods (2 lec., 6 lab)
Continuation of ANT/ARC 275. Includes advanced excavation techniques, field crew supervision, and selected field projects. Also includes using museum collections, equipment, resources and facilities of the Archaeology Centre.
Prerequisite(s): ANT/ARC 205 and ANT/ARC 265 or concurrent enrollment, ANT/ARC 275, and GLG 101.
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.
Information: Same as ARC 277.
Offered: Fall.

ANT 278 Archaeological Surveying II
4 cr. hrs. 8 periods (2 lec., 6 lab)
Continuation of ANT/ARC 276. Includes goals and objectives of archaeological exploration, archival investigation, planning field projects, and computer resources.
Prerequisite(s): ANT/ARC 205, 265 (or concurrent enrollment), 276 and GLG 101.
Information: Same as ARC 278. Consult instructor for alternative prerequisite(s).
Offered: Spring.

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 static and RTK precision GPS, 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 ARC/GIS 281.
Offered: Spring.

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, methods and techniques, and application projects.
Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment and CSA 101.
Information: Same as ARC/GEO/GIS 284.
Offered: May not be offered this year, check class schedule.

ANT 286 Electronic and Digital Field Mapping
4 cr. hrs. 8 periods (2 lec., 6 lab)
Overview of the creation of electronic and digital maps in a field setting. Includes introduction, 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.
Offered: May not be offered this year, check class schedule.

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.
Information: Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

ANT 296 Independent Studies in ANT/ARC
.5-4 cr. hrs. 1.5-12 periods (1.5-12 lab)
Students independently continue their studies in anthropology under the supervision of a faculty member.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken three times for a maximum of twelve credit hours.
Information: Same as ARC 296.
Offered: May not be offered this year, check class schedule.
### ARABIC

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**ARB 101 Elementary Modern Standard Arabic I**
5 cr. hrs. 5 periods (5 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.
Offered: Fall, Spring.

**ARB 102 Elementary Modern Standard Arabic II**
5 cr. hrs. 5 periods (5 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.
Offered: Fall.

**ARB 106 Arabic: Beginning Conversation**
4 cr. hrs. 4 periods (4 lec.)
Introduction to conversation Arabic. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and cultural perspectives. Also includes speaking and listening skills with primary emphasis on oral communication.
Offered: May not be offered this year, check class schedule.

**ARB 201 Intermediate Modern Standard Arabic I**
5 cr. hrs. 5 periods (5 lec.)
Continuation of ARB 102. Includes intermediate uses of Modern Standard Arabic alphabet, grammatical structures, interpersonal transactions and protocols, and cultural contexts. Also includes intermediate speaking, listening, reading, and writing in Arabic.
Prerequisite(s): ARB 102.
Offered: May not be offered this year, check class schedule.

**ARB 202 Intermediate Modern Standard Arabic II**
5 cr. hrs. 5 periods (5 lec.)
Continuation of ARB 201. Includes intermediate complex uses of Modern Standard Arabic alphabet, complex grammatical structures, complex interpersonal transactions and protocols, and complex cultural contexts. Also includes intermediate complex speaking, listening, reading, and writing of Arabic.
Prerequisite(s): ARB 201.
Offered: May not be offered this year, check class schedule.

### Archaeology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**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.
Offered: Fall, Spring.

**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.
Offered: Spring.

**ARC 075 Field Archaeology**
4 cr. hrs. 8 periods (2 lec., 6 lab)
Participation in archaeological field activities. Includes a non-technical approach with an emphasis on local field work. Also includes using museum collections, equipment, resources and facilities of the Archaeology Centre.
Offered: May not be offered this year, check class schedule.
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.
Offered: May not be offered this year, check class schedule.

ARC 101 Human Origins and Prehistory  
3 cr. hrs. 3 periods (3 lec.)
Survey of physical 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.
Offered: Fall, Spring.

ARC 110 Buried Cities and Lost Tribes  
3 cr. hrs. 3 periods (3 lec.)
Exploration of the human past. Includes anthropology and its subfields, basics of archaeology, modern humans, origins of domestication, development of social complexity, ranked societies, and states around the world, and archaeology in the modern world.
Information: Same as ANT 110.
Offered: Fall, Spring.

ARC 180 Artifact Identification: Tucson  
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.
Offered: Spring.

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.
Offered: Fall.

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 fossil evidence, environmental and cultural change, primate anatomy and behavior, human genetics, human biology and biocultural interactions. Also includes the use of museum collections, equipment, resources, and facilities of the Archaeology Centre.
Information: Same as ANT 204IN.
Offered: Spring.

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, Paleo-Indians, Archaic people, Hohokam, Mogollon, Anasazi, and other Southwestern cultures, and late prehistoric and historic cultural change.
Information: Same as ANT 205.
Offered: Fall, Spring.

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 theory in archaeological method and techniques of archaeological excavation; remote sensing, surveying, and mapping; dating methods; archaeological analysis and classification; interpretation of archaeological data; and the role of archaeology in cultural heritage protection and management. Also includes using museum collections, equipment, resources, and facilities of the Archaeology Centre.
Prerequisite(s): ANT/ARC 101 or 110 or 205.
Information: Prerequisite(s) may be waived with consent of instructor.
Information: Same as ANT 225.
Offered: Fall.
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 101, 180.  
**Information:** Prerequisites may be waived with consent of instructor.  
**Information:** Same as ANT 250.  
**Offered:** May not be offered this year, check class schedule.

ARC 261 Biological Anthropology  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Interaction of human biology and culture. Includes biological anthropology as natural and social sciences; human genetics; microevolution; macroevolution; human variability; the human phenotype; health, disease, and epidemiology; demography of human populations, and population biology and genetics. Also includes using museum collections, equipment, resources, and facilities of the Archaeology Centre.  
**Prerequisite(s):** ANT/ARC 101.  
**Information:** Prerequisite(s) may be waived with consent of instructor.  
**Information:** Same as ANT 261.  
**Offered:** May not be offered this year, check class schedule.

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.  
**Offered:** Fall.

ARC 267 Introduction to Geographic Information Systems  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Introduction to the technology of geographic information systems (GIS). Includes the evolution of the technology, applications, benefits and costs, characteristics of geographic data, data types, database concepts, and operations and functionality. Also includes hardware, software, implementation, legal issues, and the future of geographic information systems.  
**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.  
**Offered:** Fall.

ARC 275 Archaeological Excavation I  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Introduction to the techniques of archaeological mapping, excavation and recording. Includes field experience in southern Arizona. Also includes using museum collections, equipment, resources and facilities of the Archaeological Centre.  
**Information:** Same as ANT 275.  
**Offered:** Fall.

ARC 276 Archaeological Surveying I  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Techniques and methods for recognizing, locating and recording archaeological sites. Includes exploration methods, issues of cultural resource management, instrument skills, map use, and remote sensing application. Also includes natural resources associated with archaeological sites, application of field techniques, and documentation.  
**Prerequisite(s):** ANT/ARC 180 or concurrent enrollment.  
**Recommendation:** Consult instructor for alternative prerequisites.  
**Information:** Same as ANT 276.  
**Offered:** Spring.

ARC 277 Archaeological Excavation II  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Continuation of ARC/ANT 275. Includes advanced excavation techniques, field crew supervision, and selected field projects. Also includes using museum collections, equipment, resources and facilities of the Archaeology Centre.  
**Prerequisite(s):** ANT/ARC 205 and ANT/ARC 265 or concurrent enrollment, ANT/ARC 275 and GLG 101.  
**Recommendation:** Consult instructor for alternative prerequisites before enrolling in this course.  
**Information:** Same as ANT 277.  
**Offered:** Fall.
ARC 278 Archaeological Surveying II  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Continuation of ARC/ANT 276. Includes goals and objectives of archaeological exploration, archival investigation, planning field projects, and computer resources.  
Prerequisite(s): ANT/ARC 205, 265 (or concurrent enrollment), 276 and GLG 101.  
Information: Same as ANT 278. Consult instructor for alternative prerequisite(s).  
Offered: Spring.

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 static and RTK precision GPS, 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(s) may be waived with equivalent experience or consent of instructor. Same as ANT/GIS 281.  
Offered: Spring.

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, methods and techniques, and application projects.  
Prerequisite(s): ANT/ARC/Geo/GIS 265 or concurrent enrollment, and CSA 101.  
Information: Same as ANT/Geo/GIS 284.  
Offered: May not be offered this year, check class schedule.

ARC 286 Electronic and Digital Field Mapping  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Overview of the creation of electronic and digital maps in a field setting. Includes introduction, 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.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: May not be offered this year, check class schedule.

ARC 296 Independent Studies in ANT/ARC  
.5-4 cr. hrs. 1.5-12 periods (1.5-12 lab)  
Students independently continue their studies in anthropology under the supervision of a faculty member.  
Information: Consent of instructor is required before enrolling in this course.  
Information: May be taken three times for a maximum of twelve credit hours.  
Information: Same as ANT 296.  
Offered: May not be offered this year, check class schedule.

Art  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.  
Offered: Fall, Spring, Summer.
ART 105 Exploring Art and Visual Studies  
3 cr. hrs. 3 periods (3 lec.)  
Exploration of art and visual image within the context of culture. Includes selective perception, formal analysis, materials and techniques, art in a historical framework, visual culture and studies, meaning and value in art and visual culture, and high and low culture art. Also includes contemporary issues; traditional and contemporary themes in art; museums, galleries, and public spaces; and process, form, and content in making art.  
Offered: Fall, Spring, Summer.

ART 106 Survey of Painting Materials and Techniques  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Technical and theoretical investigation of the most prominent painting methods from Ancient Greece to the present. Includes materials used in painting, the fresco and encaustic techniques, the glair technique, the egg tempera technique, the indirect and direct oil techniques, and the watercolor technique.  
Offered: Fall, Spring.

ART 108 Mexican/Chicano Mural Painting  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Introduction to and application of the principles of Mexican mural painting. Includes historical and contemporary events that influenced the birth and development of mural art, prominent muralists in Europe, Mexico and the United States that influenced and define the Chicano mural movement, Chicano mural painting in the United States, research and development for student mural project, and creating a portable mural.  
Offered: May not be offered this year, check class schedule.

ART 109 Watercolor Painting  
3 cr. hrs. 3 periods (3 lec.)  
Introductory course in watercolor painting that explores basic materials, techniques, and development of students’ personal style. Includes the use of washes, wet-in-wet, dry brush, color mixing, and value. Also includes design, principles of composition, space, and form.  
Offered: May not be offered this year, check class schedule.

ART 110 Drawing I SUN# ART 1111  
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.  
Prerequisite(s): ART 100.  
Information: Prerequisites may be waived with consent of instructor.  
Offered: Fall, Spring, Summer.

ART 115 Color and Composition  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Introduction to recognizing color principles and relationships and analyzing duplicating colors. Includes value scale, color wheel, intensity, color relationships, transparency, dimension, luminosity, and creative projects.  
Recommendation: Completion of ART 100 before enrolling in this course.  
Offered: Fall, Spring.

ART 120 Sculptural Design SUN# ART 1115  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
The study of volume and spatial relationships through modeling, casting, carving, and construction using three-dimensional concepts and media. Includes visual literacy and critical analysis, art elements explored through creative problems, range of media, approaches to three-dimensional design, verbalization of visual perceptions, basic sculptural design lab procedures, and content.  
Recommendation: Completion of ART 100 before enrolling in this course.  
Offered: Fall, Spring.

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.  
Information: There may be additional supply costs in addition to course fees.  
Offered: May not be offered this year, check class schedule.
ART 123 Lost Wax Sculpture Casting
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to metal casting of sculpture with emphasis on the ceramic shell method of moldmaking, historical and contemporary issues in cast sculpture, and individual artistic expression. Includes major techniques, health and safety issues, verbalization of visual perceptions, project variations, and content.
Recommendation: Completion of ART 100 before enrolling in this course.
Offered: Fall, Spring.

ART 128 Digital Photography I
4 cr. hrs. 6 periods (2 lec., 4 lab)
Introduction to digital photography as an art form with an emphasis on fundamental techniques of the digital camera and the digital darkroom. Includes digital cameras with manual functions, digital darkroom, digital printing, studio lighting, image composition, portfolio development, and critical analysis. Also includes the use of state-of-the-art professional quality computers and image processing software, professional digital cameras and printers, and a lighting studio with professional lighting equipment.
Recommendation: Completion of DAR 051 or experience in computer skills before enrolling in this course.
Information: Same as DAR 128.
Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and access to a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees.
Offered: Fall, Spring, Summer.

ART 130 Art and Culture: Prehistoric through Gothic SUN# ART 1101
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.
Offered: Fall, Spring.

ART 131 Art and Culture: Late Gothic through Modern Periods SUN# ART 1102
3 cr. hrs. 3 periods (3 lec.)
Continuation of ART 130. Includes western civilization’s major contribution to the development of sculpture, painting, and architecture from the Renaissance into the twentieth century.
Offered: Fall, Spring, Summer.

ART 133 Art in America
3 cr. hrs. 3 periods (3 lec.)
Introductory survey of American art from the colonial period to the present as well as European and global influences. Includes characteristics of American art, cultural conditions surrounding historical periods, influences on art production, surrounding cultural production, unique contributions of diverse cultural groups, and critical methodologies.
Offered: Summer.

ART 135 Pre-Columbian Art
3 cr. hrs. 3 periods (3 lec.)
Anthropological and art historical survey of the indigenous cultures of the Americas from the earliest times to the period of the Spanish conquest. Includes non-Western art and Western gaze, humanity in the Americas, art and architecture of the Pre-Columbian Andes, art and architecture of Pre-Columbian Mesoamerica, and North American indigenous art and architecture.
Offered: May not be offered this year, check class schedule.

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.
Information: Same as ANT 136.
Offered: Fall, Spring.

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 of fundamental technique of the camera and darkroom. Includes film development, printing, beginning portfolio development and historical content.
Recommendation: Completion of ART 100 before enrolling in this course.
Offered: Fall, Spring.
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.  
Offered: Spring.

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.  
Offered: Fall.

ART 147 Alternative Processes in Photography  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Designed for the advanced photographer/digital image maker interested in expanding knowledge of alternative photographic processes. Includes bridging 19th century with 21st century processes via digital technologies and mid-1800 printing methods.  
Recommendation: Completion of ART 100 and advanced darkroom and computer experience before enrolling in this course.  
Offered: Spring.

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.  
Offered: Fall, Spring, Summer.

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.  
Prerequisite(s): ART 100.  
Offered: Fall, Spring, Summer.

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, processes, and techniques of blacksmithing; layout and design of projects; metals lab procedures; metallurgical theory; metalworking skills and concepts for tool making; tool design; steps in blade making; knife handle forming; and forging methods.  
Recommendation: Completion of ART 100 is recommended before enrolling in this course.  
Offered: Fall, Spring.

ART 180 Weaving I: Four-Harness Loom  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Weaving on a four-harness loom. Includes projects involving color, texture, patterns, and the use of tabby, twill, tubular, textural, and tapestry weaves in the creation of fiber art and creative and functional objects.  
Recommendation: Completion of ART 100 before enrolling in this course.  
Offered: Fall.

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 basketry, crochet, macramé, plaiting, surface design, and mixed media, which are used to create artistic compositions.  
Recommendation: Completion of ART 100 before enrolling is this course.  
Offered: Spring.
ART 199 Introduction to Co-op: Visual Arts
1 cr. hrs. 1 periods (1 lec.)
Introduction to the work environment in the Visual Arts. Includes the internship purpose, applying course work, oral and written communication skills, self-management on the job, and resumes and interviews.

Corequisite(s): ART 199WK.
Information: Consent of instructor or department chair and successful completion of twelve (12) credit hours of ART course work are required before enrolling in this course.
Information: May be taken four times for a maximum of four credit hours.
Offered: May not be offered this year, check class schedule.

ART 199WK Co-op Work: Visual Arts
1-5 cr. hrs. 5-25 periods (5-25 lab)
A supervised work environment in the Visual Arts field. Includes completion of hours in the field, knowledge of visual arts job site, demonstration of aptitudes and abilities, journal/record of daily experiences and observations, and maintaining a written and digital contact list.

Corequisite(s): ART 199.
Information: Consent of instructor or department chair and successful completion of twelve (12) credit hours of ART course work are required before enrolling in this course.
Information: May be taken four times for a maximum of twenty credit hours.
Offered: May not be offered this year, check class schedule.

ART 203 Survey of Contemporary Studio Art
3 cr. hrs. 3 periods (3 lec.)
Introduction to the history, theory, and issues of contemporary studio arts practices. Includes stylistic movements, presentations and demonstrations by faculty addressing current issues and techniques, marketing and funding, visual culture, introduction to postmodernist art theory, and shifting display modalities.

Recommendation: Completion of WRT 100 before enrolling in this course.
Offered: Spring.

ART 210 Drawing II
3 cr. hrs. 5 periods (2 lec., 3 lab)
Continuation of ART 110. Includes further development of imaginative and technical skills in the use of space and graphic design. Also includes the development of a portfolio of finished drawings.

Prerequisite(s): ART 110.
Offered: Fall, Spring.

ART 212 Printmaking I
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to basic aesthetics and techniques of printmaking. Includes intaglio etching, relief printing, and monotypes.

Prerequisite(s): ART 100.
Information: Prerequisites may be waived with consent of instructor.
Offered: Fall, Spring.

ART 213 Life Drawing
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.

Prerequisite(s): ART 100.
Recommendation: Completion of ART 110 before enrolling in this course.
Offered: Fall, Spring.

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 etching, relief printing, monotype techniques, and alternative and non-traditional approaches to printmaking.

Prerequisite(s): ART 212.
Offered: Fall, Spring.

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.

Prerequisite(s): ART 110.
Recommendation: Completion of ART 115 before enrolling in this course.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.
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.

Prerequisite(s): ART 100.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.

ART 217 Painting II
3 cr. hrs. 5 periods (2 lec., 3 lab)
Continuation of ART 215. Includes advanced principles and practice of painting techniques. Also includes mixed media, the art market, and contemporary painting methods.

Prerequisite(s): ART 115 and 215.
Offered: Spring.

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.

Prerequisite(s): ART 216.
Information: Students may select areas of interest for concentration and refinement of skills.
Offered: Fall, Spring.

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.
Offered: Spring.

ART 220 Sculpture
3 cr. hrs. 6 periods (3 lec., 3 lab)
Exploration of methods, materials, and content used in sculpture. Includes art elements, art principles, media and technique, sculpture lab procedures, content issues, projects, and visual literacy and critical analysis.

Information: ART 120 or consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.

ART 230 History of Photography
3 cr. hrs. 3 periods (3 lec.)
Introduction to the history of photography from 1839 to contemporary schools. Includes development of the technical aspects of photography, styles, movements and its relationship to artistic and cultural heritage.

Offered: Spring.

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.
Information: Same as DAR 232.
Information: Students must own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees. The prerequisite may be waived for basic skills in digital photography. See a ART/DAR digital photography instructor for prerequisite information.
Offered: Fall, Spring.
ART 233 Digital Photography III  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Continuation of ART/DAR 232. Includes digital capture and image acquisition, advanced digital darkroom and digital output, advanced image composition, advanced multiple images integration, advanced portfolio development, and advanced critical analysis. Also includes the advanced use of state-of-the-art professional quality computers and image processing software, professional digital cameras, scanners, printers, and projectors.  
**Prerequisite(s):** ART/DAR 232 and DAR 221.  
**Information:** Same as DAR 233. 
**Information:** Students must own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. **Information:** There may be additional supply costs in addition to course fees.  
**Information:** The prerequisite(s) may be waived for basic skills in digital photography. See the ART/DAR instructor for prerequisite information.  
**Offered:** Spring.  

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.  
**Offered:** Spring.  

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.  
**Information:** May be taken four times for a maximum of twelve credit hours.  
**Offered:** Fall, Spring.  

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.  
**Offered:** Spring.  

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 management of student gallery spaces on campus. Also includes community involvement with local business.  
**Recommendation:** Completion of ART 100 before enrolling in this course.  
**Offered:** Fall, Spring.  

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.  
**Offered:** Fall, Spring.  

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 press mold, ceramic artist research, and discussion and exploration topics.  
**Prerequisite(s):** ART 260.  
**Offered:** Fall, Spring.
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, plaster press mold, ceramic artist research, and discussion and exploration topics.
**Prerequisite(s):** ART 261.
**Offered:** Spring.

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.
**Prerequisite(s):** ART 100.
**Information:** This course requires a special fee through Sonoran Glass Art Academy. Please contact the Arts, Communications and Humanities Division at the West Campus (206-6974) for further information.
**Offered:** Fall, Spring.

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, hollow and solid glass forms, the blowpipe, cold working glass, a final project, and visual literacy and critical analysis.
**Prerequisite(s):** ART 265.
**Information:** This course requires a special fee through Sonoran Glass Art Academy. Please contact the Arts, Communications and Humanities Division at the West Campus (206-6974) for further information.
**Offered:** Fall, Spring.

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.
**Offered:** Spring.

ART 271 Metalwork II: Smithing and Casting
3 cr. hrs. 5 periods (2 lec., 3 lab)
Design and production of jewelry and metal objects. Includes design approaches to metalwork, review or various intermediate techniques, functional considerations involved in smithing and casting, and safety and health issues.
**Prerequisite(s):** ART 170.
**Offered:** May not be offered this year, check class schedule.

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.
**Recommendation:** Completion of ART 100 is recommended before enrolling in this course.
**Information:** May be taken four times for a maximum of twelve credit hours.
**Offered:** Fall, Spring.

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

ART 296I1 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.
**Information:** May be taken four times for a maximum of twelve credit hours.
**Offered:** Spring.
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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: Fall, Spring.

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.
Information: May be taken four times for a maximum of twelve credit hours. 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.
Offered: Fall, Spring.
ART FOR PERSONAL DEVELOPMENT

APD 050 Photography
2 cr. hrs. 4 periods (1 lec., 3 lab)
Introduction to film and digital photography for the hobbyist/enthusiast. Includes history of still photography, introduction to the camera: digital or film, principles of exposure, manipulating light, and darkroom orientation.
Information: Students will supply their own camera and necessary materials. There are no additional course fees.
Offered: May not be offered this year, check class schedule.

APD 051 Mariachi Performance
2 cr. hrs. 4 periods (1 lec., 3 lab)
Introduction to mariachi music. Includes playing and transposing songs and melodies, as well as learning the basics of ensemble singing. Also includes the care and maintenance of various mariachi musical instruments.
Offered: May not be offered this year, check class schedule.

APD 062 Acrylic and Oil Painting I
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.
Offered: May not be offered this year, check class schedule.

APD 063 Acrylic and Oil Painting II
2 cr. hrs. 4 periods (1 lec., 3 lab)
Intermediate painting for further development of the techniques. Includes review of painting preparation, intermediate composing and building paintings, and intermediate development of a personal vision.
Recommendation: Completion of APD 062 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

APD 064 Acrylic and Oil Painting III
2 cr. hrs. 4 periods (1 lec., 3 lab)
Advanced painting for technique, color knowledge, and content sources. Includes review of painting preparation, advanced level of composing and building paintings, and advanced development of a personal voice and vision.
Recommendation: Completion of APD 063 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

APD 065 Watercolor I
2 cr. hrs. 4 periods (1 lec., 3 lab)
Introduction to watercolor painting for personal use. Includes watercolor materials, properties of watercolor pigments, and watercolor application methods.
Offered: May not be offered this year, check class schedule.

APD 066 Watercolor II
2 cr. hrs. 4 periods (1 lec., 3 lab)
Continuation of APD 065. Includes use of photographs and drawings, watercolor styles, watercolor applications, and beginning experimentation.
Offered: May not be offered this year, check class schedule.

APD 067 Watercolor III
2 cr. hrs. 4 periods (1 lec., 3 lab)
Continuation of APD 066. Includes intermediate watercolor applications and intermediate experimentation.
Offered: May not be offered this year, check class schedule.

APD 068 Watercolor IV
2 cr. hrs. 4 periods (1 lec., 3 lab)
Watercolor IV Continuation of APD 067. Includes advanced watercolor applications and advanced experimentation.
Offered: May not be offered this year, check class schedule.

APD 069 Abstract Painting
2 cr. hrs. 4 periods (1 lec., 3 lab)
Introduction to abstract painting. Includes painting preparation, composing and building paintings, and developing a personal vision. A series of painting projects will lead students through the process of loosening the hold on realism and discovering new ways to evoke feeling through art.
Offered: May not be offered this year, check class schedule.
Asian Pacific Americans
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

APA 200 Contemporary Issues in Asian American Society
3 cr. hrs. 3 periods (3 lec.)
Introduction to the history and experiences of Asian Americans and Pacific Islanders within the United States. Includes demographic classification for Asian Pacific Americans (APA), history of Asians in America, contemporary APA issues within the United States, and comparison of APA experiences to other minority groups in the United States. Offered: May not be offered this year, check class schedule.

Astronomy
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

AST 050 The Sky
1 cr. hrs. 3 periods (3 lab)
Introduction to the terminology, technology, and concepts related to the sky. Includes the celestial sphere, observation, and recent advances in amateur astronomy. Offered: May not be offered this year, check class schedule.

AST 101 Solar System
3 cr. hrs. 3 periods (3 lec.)
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. Corequisite(s): AST 101LB. Offered: Fall, Spring.

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 measuremental and mathematical exercises, outside observation projects, independent studies, and self-initiated trips to local astronomy facilities. Information: IN is the integrated version of the course with the lecture and lab taught simultaneously. Offered: Fall, Spring, Summer.

AST 101LB Solar System Laboratory
1 cr. hrs. 3 periods (3 lab)
Laboratory for AST 101. Includes in-class measuremental and mathematical exercises, outside observation projects, independent studies, and self-initiated field trips to local astronomy facilities. Emphasizes hands-on group and individual experiences and mathematical reasoning to enrich understanding of AST 101 lecture material. Corequisite(s): AST 101. Offered: Fall, Spring.

AST 102 Stars, Galaxies, Universe
3 cr. hrs. 3 periods (3 lec.)
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. Corequisite(s): AST 102LB. Offered: Fall, Spring.

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 measuremental and mathematical exercises, outside observation projects, independent studies, and self-initiated field trips to local astronomy facilities. Information: IN is the integrated version of the course with the lecture and lab taught simultaneously. Offered: Fall, Spring, Summer.
AST 102LB Stars, Galaxies, Universe Laboratory
1 cr. hrs. 3 periods (3 lab)
Laboratory for AST 102. Includes in-class measuremental and mathematical exercises, outside observation projects, independent studies, and self-initiated field trips to local astronomy facilities. Emphasizes "hands-on" group and individual experiences and mathematical reasoning to enrich understanding of AST 102 lecture material.
Corequisite(s): AST 102.
Offered: Fall.

AST 105 Life in the Universe
3 cr. hrs. 3 periods (3 lec.)
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.
Corequisite(s): AST 105LB.
Offered: May not be offered this year, check class schedule.

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.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

AST 105LB Life in the Universe Laboratory
1 cr. hrs. 3 periods (3 lab)
Laboratory for AST 105. Includes observations, experiments, image analysis, scientific and photogeology laboratory exercise, group telescopic observation projects, and personal observation projects.
Corequisite(s): AST 105.
Offered: May not be offered this year, check class schedule.

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.
Information: May be taken three times for a maximum of twelve credit hours.
Offered: May not be offered this year, check class schedule.

Automotive Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

AUT 100 Small Engine Troubleshooting and Repair
3 cr. hrs. 5 periods (1 lec., 4 lab)
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.
Offered: Fall, Spring, Summer.

AUT 101 Automotive Maintenance
3 cr. hrs. 7 periods (1 lec., 6 lab)
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.
Offered: Fall, Spring, Summer.

AUT 105 Light Line Maintenance
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring, Summer.
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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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, horn and wiper/ washer, integrated circuits, and computerized control systems.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.
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.  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring, Summer.

AUT 170 Structural Analysis and Repair  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Structural collision repair of automotive vehicles. Includes frame inspection and repair, Unibody inspection, measurement and repair, fixed glass, and metal welding and cutting.  
Offered: May not be offered this year, check class schedule.

AUT 171 Non-Structural Analysis and Repair  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Non-structural collision repair of automotive vehicles. Includes preparation, outer body panel repairs, replacements and adjustments, metal finishing and body filling, moveable glass and hardware, metal welding and cutting, and plastics and adhesives.  
Offered: May not be offered this year, check class schedule.

AUT 172 Introduction to Mechanical and Electrical Systems  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Mechanical and electrical collision repair of automotive vehicles. Includes suspension and steering, electrical, brakes, heating and air conditioning, cooling systems, drive train, fuel, intake and exhaust systems, and restraint system.  
Offered: May not be offered this year, check class schedule.

AUT 173 Painting and Refinishing  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Collision repair preparation, mixing, and applying paint. Includes safety precautions, surface preparation, spray gun and related equipment operation, paint mixing, matching and applying, paint defects—causes and cures, and final detail.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: Fall, Spring, Summer.

Aviation Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

AVM 101 Structural Repair I  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Structural repair of fuselage, wings and empennage groups. Includes safety, hand and machine cutting, and measuring tools. Also includes layout methods and structural repair processes.  
Recommendation: Completion of mathematics assessment above MAT 082 before enrolling in this course.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: Fall.

AVM 102 Structural Repair II  
4 cr. hours. 8 periods (2 lec., 6 lab)  
Continuation of AVM 101. Includes safety, bend allowance, layout, fasteners, machine usage, patching techniques and structural repair techniques.  
Prerequisite(s): AVM 101.  
Offered: Fall.
AVM 105 Aircraft Sheetmetal Repair
5 cr. hrs. 8 periods (2 lec., 6 lab)
Principles and procedures for fuselage, wing, and empennage sheetmetal repair. Includes safety, hand tools, layout methods, materials, fasteners, repair techniques, parts fabrication, and corrosion prevention and control.
Offered: Summer.

AVM 109 English for Aviation Technology
3 cr. hrs. 3 periods (3 lab)
Aviation Technology related English for native and non-native speakers of English with high-intermediate language skills. Includes language skills needed for participation in Aviation Technology coursework, class activities, licensing exams, and workplace situations. Develops active use of field-related terms and concepts through contextualized practice. Also includes successful job-search skills, communication with supervisors and co-workers, employee rights and responsibilities, problem-solving strategies, and understanding the culture of the American Aviation Technology workplace.
Prerequisite(s): Placement into REA 091 or better.
Recommendation: Concurrent enrollment in ESL 088 or REA 091.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

AVM 130 Aircraft Composite Repair
5 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.
Offered: Spring.

AVM 150 Structural Repair III
4 cr. hrs. 8 periods (2 lec., 6 lab)
Continuation of AVM 102. Includes repair publications, materials handling, cable fabrication, machining processes, protective coatings, hand forming and structural repair processes.
Prerequisite(s): AVM 102.
Offered: Fall.

AVM 151 Structural Repair IV
4 cr. hrs. 8 periods (2 lec., 6 lab)
Continuation of AVM 150. Includes tube and hose fabrication, locking fasteners, damage classifications and structural repair processes.
Prerequisite(s): AVM 150.
Offered: Spring.

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.
Offered: Spring.

AVM 202 Aviation Safety
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring, Summer.
AVM 203 Structural Repair V  
4 cr. hrs. 8 periods (2 lec., 6 lab)  
Continuation AVM 151. Includes jiggling, shoring and alignment, corrosion and heat treatment and structural repair processes.  
**Prerequisite(s):** AVM 151.  
**Offered:** Spring.

AVM 204 Structural 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.  
**Offered:** Spring

AVM 205 Motion Dynamics  
3 cr. hrs. 5 periods (1 lec., 4 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.  
**Offered:** Fall, Summer.

AVM 206 Materials and Processes  
3 cr. hrs. 5 periods (1 lec., 4 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.  
**Offered:** Fall Summer.

AVM 207 Weight and Balance  
3 cr. hrs. 5 periods (1 lec., 4 lab)  
Preparing aircraft for weight and balance. Includes referencing service and maintenance manuals, type certificate data sheets, terms, standard weight and balance practices, weighing an aircraft, principles of calculating center of gravity, correction of out of balance conditions, addition and subtraction of equipment, equipment list, flight manual updates, control surface balancing, identification and selection of standards hardware, installation and assembly of specialty hardware, and precision measuring equipment.  
**Prerequisite(s):** GTM 105.  
**Offered:** Fall, Summer.

AVM 208 Basic Electricity  
5 cr. hrs. 8 periods (2 lec., 6 lab)  
Introduction to basic aircraft electricity. Includes study of the structure of matter, electron theory, current/ electron flow, direct current, alternating current, Ohm's Law, Kirchoff's laws, circuit elements, electrical calculation and measurements, interpreting schematics and other wiring diagrams, battery theory and maintenance, aircraft electrical systems, and introduction to communication and navigation radio systems.  
**Prerequisite(s):** GTM 105.  
**Offered:** Fall, Spring.

AVM 209 Intermediate Electricity  
5 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.  
**Offered:** Spring.

AVM 210 Advanced Composite Aircraft Repair I  
4 cr. hrs. 4 periods (4 lec.)  
Theory and application of composite materials utilized in aircraft construction. Includes material types, handling and storage, manufacturing techniques, design criteria, safety, tool and equipment usage, damage and repair assessment, repair techniques, fastening systems, and documentation. Also includes a heavy emphasis on repair performance utilizing the Structural Repair Manuals for composite monolithic and sandwich core structures.  
**Corequisite(s):** AVM 210LB.  
**Offered:** Summer.
AVM 210LB Advanced Composite Aircraft Repair I Lab
1 cr. hrs. 3 periods (3 lab)
Laboratory for AVM 210. Includes theory and application of composite materials utilized in aircraft construction. Also includes material types, handling and storage, manufacturing techniques, design criteria, safety, tool and equipment usage, damage and repair assessment, repair techniques, fastening systems, and documentation. Also includes a heavy emphasis on repair performance utilizing the Structural Repair Manuals for composite monolithic and sandwich core structures.

Corequisite(s): AVM 210.
Offered: Summer.

AVM 211 Alternate Structures
5 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 finisheings.
Offered: Fall, Spring.

AVM 218 Airframe Rigging and Landing Gear Systems
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring.

AVM 219 Airframe Inspections
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Spring.

AVM 222 Advanced Electrical System Airframe
5 cr. hrs. 8 periods (2 lec., 6 lab)
Theory and application of aircraft electrical power systems. Includes airframe systems and components, electronic flight instrument, auto pilots, serves and approach coupling systems, communication and navigation systems, antenna systems, fuel management, fluid quantity, pressure systems, AC, DC power generation and distribution, cabin temperature, pressurization, control systems, hydraulic power, landing gear safety sensor, auto brake and anti-skid systems, flight control, load and feel limiting and lighting systems.
Prerequisite(s): AVM 209.
Offered: May not be offered this year, check class schedule.

AVM 223 Hydraulic and Pneumatic Power
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring.

AVM 224 Atmospheric Controls
3 cr. hrs. 5 periods (1 lec., 4 lab)
Atmospheric controls and its elements that are of concern to flight. Includes ice and rain detection and control systems, types of operations and maintenance, physiological requirements for flight crews and passengers and the human support systems, oxygen systems, cabin pressurization system and their operations, and safety and maintenance requirements.
Offered: Fall, Spring.

AVM 225 Fire, Ice, Rain, and Fuel Systems
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring.
AVM 226 Engine Electrical Systems
5 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.
Offered: Fall, Spring.

AVM 227 Engine Air Flow Systems
3 cr. hrs. 5 periods (1 lec., 4 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.
Offered: Fall, Spring.

AVM 228 Aircraft Propellers
3 cr. hrs. 5 periods (1 lec., 4 lab)
Basics of aircraft propellers. Includes propeller nomenclature, types, construction, theory, installations, and maintenance,
constant speed systems, feathering systems, reversing systems, icing systems, synchronizing systems, and unducted fans.

Prerequisite(s): AVM 231.
Offered: Fall, Spring.

AVM 229 Engine Support Systems
3 cr. hrs. 5 periods (1 lec., 4 lab)
Theory and application of support systems for gas turbine engines. Includes fire protection, fire detection systems, fire
extinguishing agents, fire protection systems, fire detection system maintenance, turbine engine pneumatic systems,
pneumatic starting systems, thrust reversers, auxiliary power units, turbine engine removal, turbine engine installation,
and engine storage and transport.

Prerequisite(s): AVM 226, 231, and 234.
Offered: Spring, Summer.

AVM 231 Engine Principles, Monitoring and Inspection
5 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.
Offered: Fall, Spring.

AVM 232 Reciprocating Engine Overhaul
5 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.
Offered: Fall, Spring.

AVM 233 Turbine Engines
5 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.
Offered: Fall, Summer.

AVM 234 Engine Fuel Metering and Operation
5 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; pressure carburetor maintenance and installation; fuel injection
systems, Bendix fuel injection and maintenance, TCM fuel injection and maintenance, fuel metering system components
and maintenance, turbine engine fuel systems maintenance, components, and jet fuel controls; and reciprocating, turbine,
and turbo propeller engine operations.

Prerequisite(s): AVM 226, 228, and 231.
Offered: Spring, Summer.
AVM 260 Advanced Composite Aircraft 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 210/210LB.
Corequisite(s): AVM 260LB
Offered: Summer.

AVM 260IN Advanced Composite Aircraft Repair II
4 cr. hrs. 10 periods (1 lec., 9 lab)
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 210/210LB.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: May not be offered this year, check class schedule.

AVM 260LB Advanced Composite Aircraft Repair II Lab
3 cr. hrs. 9 periods (9 lab)
This is the Lab portion of AVM 260.
Prerequisite(s): AVM 210/210LB.
Corequisite(s): AVM 260.
Offered: Summer.

Avionics Technician Training

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. Includes the classification and requirements of airports, airspace and atmospheric environments, and types of avionics equipment used today; instrument, crew cabin layouts and user modes. Also includes 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.
Offered: Fall.

ATT 102 Aircraft Electrical Systems
3 cr. hrs. 3 periods (3 lec.)
An overview of aircraft electrical systems, 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, fuel, safety, warning systems, cabin lighting, and entertainment systems.

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

ATT 103 Basics of Avionics Installation
3 cr. hrs. 4 periods (2 lec., 2 lab)
Concepts, techniques, and skills to install electronic and avionics equipment and panel layout standards. Includes avionics support structures installations, fabrication, modification of fabrication, and instrument panels. Includes electrical equipment bays, instrument mounting, handling precautions for sensitive devices, equipment cooling, typical wiring diagrams, installation drawings, conductor and coaxial types, cutting, sizing, termination, marking, bundling, anchoring techniques and practices. Also includes circuit protection devices, terminal installation, connectors and typical shop tooling, pitot-static system, turn and bank, artificial horizon, basic flight instrumentation, installation and troubleshooting.

Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.
Offered: Fall.
ATT 104 Operating Systems I, Communication and Navigation
3 cr. hrs. 4 periods (2 lec., 2 lab)
Topical discussion on typical communication and navigation systems, schematic usage, special tooling and equipment, switching, circuit protection, instrument panel features. Includes standard wiring practices of single and multiple flight instrumentation sources, location reporting equipment, as well as essential standard avionic basic flight devices.
*Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.*
*Offered: Fall, Spring.*

ATT 105 NCATT-AET Exam Preparation
3 cr. hrs. 3 periods (3 lec.)
Preparation for the National Center for Aircraft Technician Training-Aircraft Electronics Technician (NCATT-AET) examination. Includes general electrical theories and principals. Includes all the essential subject matter required to take the NCATT-AET test. Also includes safety, terminology phraseology, standard operating systems, standard practices, electrical theories, and common hand tooling selection.
*Offered: May not be offered this year, check class schedule.*

ATT 106 FCC Exam Preparation (PG)
3 cr. hrs. 3 periods (3 lec.)
Preparation for the Federal Communications Commission (FCC) license examination. Includes general electrical theories, principals, safety, hazards, regulations, and terminology. Also includes additional exposure to outmoded systems and materials will be reviewed to compliment the test questions.
*Offered: May not be offered this year, check class schedule.*

ATT 200 Communication and Navigation Installation
5 cr. hrs. 7 periods (3 lec., 4 lab)
Installation of typical communication and navigation systems, schematic usage, special tooling and equipment, switching, circuit protection, and instrument panel modification and installation features. Includes standard wiring and installation practices of single and multiple flight instrumentation sources, location reporting equipment, and essential standard avionic basic flight devices.
*Prerequisite(s): ATT 103 and 104.*
*Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.*
*Offered: Fall.*

ATT 201 Operating Systems II, GPS Navigation and Auto Pilot
3 cr. hrs. 3 periods (3 lec.)
Principles of operation and usage by flight crews demonstrated with flight simulators. 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; troubleshooting on Global Positioning Systems (GPS) and Auto Pilot System
*Prerequisite(s): ATT 104 and 200.*
*Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.*
*Offered: Fall.*

ATT 202 GPS Navigation and Auto Pilot Installation
5 cr. hrs. 7 periods (3 lec., 4 lab)
Principles of operation and usage by flight crews (flight simulator). Includes installation planning for electrical system requirements, typical mounting, wiring methods, connectors and antenna installation. Includes pre- and post-installation verification of system integration, functional testing, troubleshooting on Global Positioning Systems (GPS) and Auto Pilot 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.*
*Offered: Fall.*

ATT 203 Avionics Test Equipment
3 cr. hrs. 4 periods (2 lec., 2 lab)
Overview of the evolution of the modern avionics systems, test equipment, operation of and training for test equipment. Includes functional testing of pitot static, transponder and altitude reporting units, Very High Frequency Omni-directional Range (VOR), Global Positioning System (GPS), and compass navigation devices installed in aircraft or functioning mockups. Also includes special tooling and test apparatuses, the handling of aircraft, safety to personnel and equipment undergoing testing.
*Prerequisite(s): ATT 104 and 200.*
*Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.*
*Offered: Spring.*
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 replace them with modern glass cockpit indicating systems.  
Prerequisite(s): ATT 103 and 200.  
Information: Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.  
Offered: Spring.

ATT 205 Operating Systems III, Infrared and Weather Radar  
3 cr. hrs. 3 periods (3 lec.)  
Principles of operation and usage by flight crews (demonstrated through a flight simulator). Includes installation planning, electrical system requirements, typical mounting, wiring methods, connectors and antenna installation. Includes system integration, functional testing of Enhanced Vision Systems (EVS), Weather (Wx) Radar, and radio altimeter systems. Also includes the coverage of the operation, installation, troubleshooting and safety training 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.  
Offered: Spring.

ATT 206 Infrared and Weather Radar Installation  
5 cr. hrs. 7 periods (3 lec., 4 lab)  
Installation of typical Weather Radar, Radio Altimeter Systems and Enhanced Vision Systems. Includes schematic usage, special tooling and equipment, switching, circuit protection, instrument panel features for modification for installation. Includes standard wiring and installation practices of stand alone and integrated avionic devices and multifunctional display equipment. Also includes a mandatory requirement that all installed equipment be functional tested after installation of equipment.  
Prerequisite(s): ATT 103 and 205.  
Information: Includes an emphasis on one-on-one system operation, testing, and troubleshooting techniques, from technicians that are trained on the aircraft systems. Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.  
Offered: Spring.

ATT 207 Operating Systems IV, Special Navigation Equipment  
3 cr. hrs. 3 periods (3 lec.)  
Operation and installation for Ground Proximity Warning Systems (GPWS), Terrain Awareness and Warning Systems (TAWS), and Traffic and Collision Avoidance Systems (TCAS). Includes schematic usage, special tooling and equipment, switching, circuit protection, instrument panel features for modification and installation. Also includes standard wiring and installation practices of stand alone and integrated avionic devices and multifunctional display equipment.  
Prerequisite(s): ATT 101 and 102.  
Information: Includes an emphasis on one-on-one system operation, testing, and troubleshooting techniques from technicians that are trained on aircraft systems. Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.  
Offered: Summer.

ATT 208 Special Navigation Equipment Installation  
5 cr. hrs. 7 periods (3 lec., 4 lab)  
Installation of typical Ground Proximity Warning systems (GPWS), Terrain Awareness and Warning Systems (TAWS) and Traffic and Collision Avoidance Systems (TCAS). Includes schematic usage, special tooling and equipment, switching, circuit protection, instrument panel features for modification and installation. Includes standard wiring and installation practices of stand alone and integrated avionic devices and multifunctional display equipment with function check and test after installation. Also includes instrument equipment technician familiarization training in flight simulators.  
Prerequisite(s): ATT 101 and 102.  
Information: Includes an emphasis on one-on-one system operation, testing, and troubleshooting techniques from technicians that are trained on aircraft systems. Additional self-paced independent course study materials are required for non-certified Airframe and Powerplant students.  
Offered: Summer.

ATT 209 NCATT - AET Additional Ratings Exam Preparation  
3 cr. hrs. 3 periods (3 lec.)  
Preparation for the National Center for Aircraft Technician Training-Aircraft Electronics Technician (NCATT-AET) examination additional ratings including advanced weather equipment, Enhanced Synthetic Vision (EVS). Includes general obstacles to taking the additional ratings for the NCATT-AET navigation (Nav) and communication (Com) ratings.  
Prerequisite(s): ATT 105.  
Information: Current Natina; Center for Aircraft Technician Training - Aircraft Electronics Technician (NCATT-AET) certification is required prior to enrolling in this course.  
Offered: May not be offered this year, check class schedule.
Behavioral Health Services

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

BHS 172 Clinical Behaviors
3 cr. hrs. 3 periods (3 lec.)
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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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): CSA 100, SSE 128, BHS 132 and 154.
Offered: Fall, Spring, Summer.

Biology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Information: IN designates an integrated lecture/lab combination.
Offered: Fall, Spring, Summer.

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

Information: IN designates an integrated lecture/lab combination.
Offered: Fall, Spring, Summer.

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.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

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.

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

BIO 110 Techniques and Mathematics for the Laboratory
2 cr. hrs. 2 periods (2 lec.)
Introduction to the use of proper techniques and mathematical calculations in a laboratory setting. Includes safety, laboratory mathematics, and ancillary equipment and instruments.

Prerequisite(s): MAT 092 or required score on assessment test, and CHM 080 or 130 or placement into CHM 151.
Information: Prerequisite(s) may be waived with consent of instructor.
Information: Same as MLT 110.
Offered: Fall, Spring.

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.

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

BIO 121IN Current Issues in Human Biology
4 cr. hrs. 6 periods (3 lec., 3 lab)
Exploration of current topics in human biology. Includes genetics, human biology diversity, reproduction, development and aging. Also includes current topics in human health and human impacts on the environment.

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

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.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Information: Same as FSN 127IN.
Offered: Fall, Spring, Summer.

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.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: May not be offered this year, check class schedule.
BIO 156IN Introductory Biology for Allied Health
4 cr. hrs. 6 periods (3 lec., 3 lab)
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 CHM 130 before enrolling in this course.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

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 2011IN is recommended.
Information: Completion of this course and BIO 181IN with grades of C or better will enable a student to enroll in BIO 2011IN.
Offered: Fall, Spring, Summer.

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.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

BIO 181IN General Biology I: (Majors) SUN# BIO 1181
4 cr. hrs. 6 periods (3 lec., 3 lab)
Principles of structure and function of living things at the molecular, cellular and organismic levels of organization. Includes introduction to the scientific process, scientific measurements and laboratory techniques, chemistry of cells, organization of cells, metabolism, patterns of cell division, patterns of inheritance, nucleic acids, and biotechnology.

Prerequisite(s): MAT 092 or placement into MAT 122 on Mathematics assessment test, and REA 091 or placement into REA 112 on Reading assessment test.

Recommendation: Completion of CHM 080, 130 or 151 or demonstration of skills equivalent to CHM 080 on the Chemistry assessment test.

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

BIO 182IN General Biology II: (Majors) SUN# BIO 1182
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 181IN before enrolling in this course.

Information: IN designates an integrated lecture/lab combination.
Offered: Fall, Spring.

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.

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

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.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Spring.
BIO 201IN Human Anatomy and Physiology I  SUN# BIO 2201
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 with a C or better; or BIO 157 and BIO 181IN each with a grade of C or better; or completion of a 200 level (or higher) Human Anatomy and Physiology course with a C or better; or required score on the Biology Assessment Exam.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

BIO 202IN Human Anatomy and Physiology II  SUN# BIO 2202
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of BIO 201IN. Includes the structure and function of the endocrine cardiovascular, lymphatic/immune, respiratory, digestive, urinary, and reproductive systems.

Prerequisite(s): BIO 201IN with a C or better.
Information: IN designates an integrated lecture/lab combination.
Offered: Fall, Spring, Summer.

BIO 203 Anatomy and Physiology Review for Health Related Professions
1.25 cr. hrs. 1.25 periods (1.25 lec.)
Review of human body systems which includes clinical application of human anatomy and physiology. Includes the integumentary, skeletal, muscular, nervous, endocrine, circulatory, immune, respiratory, digestive, urinary/renal, and reproductive systems.

Prerequisite(s): BIO 201IN and 202IN with a 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 3.75 credit hours.
Offered: Fall, Spring.

BIO 205IN Microbiology  SUN# BIO 2205
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 firsthand experience with the organisms and processes discussed in lecture.

Prerequisite(s): BIO 156IN, 160IN, 181IN or required score on the Biology assessment test.
Recommendation: Completion of CHM 130 or equivalent.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

BIO 206 Biotechnology Instrumentation I
4 cr. hrs. 6 periods (3 lec., 3 lab)
Principles and methodologies of recombinant DNA technology. Includes preparation of solutions and growth media in a laboratory setting, and genetic analyses.
Offered: Fall.

BIO 207 Biotechnology Instrumentation II
4 cr. hrs. 6 periods (3 lec., 3 lab)
Principles and methodologies of protein expression, isolation, identification and purification. Includes immunological and cell culture techniques.
Information: Consent of instructor required before enrolling in this course.
Offered: Spring.

BIO 250 Biomedical Ethics
3 cr. hrs. 3 periods (3lec.)
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.
Offered: Fall, Spring.
BIO 289 FACES-Fostering & Achieving Cultural Equity & Sensitivity
3-4 cr. hrs. 7-8 periods (1-2 lec., 6 lab)
Introduction to current health care opportunities and issues affecting health care. Includes guided rotations in a hospital and/or clinic. Also includes a speaker series that focuses on issues of diversity that impact health care in the United States today and opportunities in the health care professions.
Info: This course is offered in collaboration with the Office of Minority Affairs at the University of Arizona.
Offered: Fall, Spring.

BIO 290 Field Biology: Ecological and Environmental Field Experience
1 cr. hrs. 5 periods (5 lab)
Field expeditions in which ecological and environmental principles and concepts are observed and studied. Includes natural organisms in the field area, biotic communities and ecosystems, human impacts on ecosystems, and the local government’s role.
Info: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring, Summer.

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.
Info: One semester of biology and consent of instructor are required before enrolling in this course.
Info: May be taken three times for a maximum of twelve credit hours.
Offered: May not be offered this year, check class schedule.

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.
Info: One year of biology is required before enrolling in this course.
Info: May be taken two times for a maximum of eight credit hours.
Offered: Fall, Spring, Summer.

BIO 299 Introduction to Co-op: Biotechnology
1 cr. hrs. 1 periods (1 lec.)
Principles of job success. Includes biotechnology workplace skills; communication; time and energy management; stress and its management; careers; placing yourself on the job market; principles, techniques, and practices in the career field; and problems in the work situation.
Prerequisite(s): BIO 206 and 207 with a grade of B or better.
Corequisite(s): BIO 299WK.
Recommendation: Completion of CHM 236 before enrolling in this course.
Info: Consent of instructor is required before enrolling in this course.
Info: May be taken two times for a maximum of two credit hours.
Offered: Fall, Spring.

BIO 299WK Co-op Work in Biotechnology
3 cr. hrs. 15 periods (15 lab)
A supervised cooperative work program for students in the biotechnology industry or academic research. Includes teacher-coordinators working with students and their supervisors in industry or research. Also includes developing competency and improved self-confidence in the biotechnology workplace.
Prerequisite(s): BIO 206 and 207 with a grade of B or better.
Corequisite(s): BIO 299.
Recommendation: Completion of CHM 236 before enrolling in this course.
Info: Consent of instructor is required before enrolling in this course.
Info: This may be paid or unpaid experience.
Info: May be taken two times for a maximum of six credit hours.
Offered: Fall, Spring.

Building and Construction Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.
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.
Offered: Fall, Spring.

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.
Offered: Spring.

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 111, 112, 113, 114, 115, and 132 or concurrent enrollment.
Offered: Fall, Spring, Summer.

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 111, 112, 113, 114, and 115 or concurrent enrollment.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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, and rigging and moving equipment use.
Offered: Spring, Summer.
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 112 and 114 before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Spring.

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.
Offered: Fall, Spring, Summer.

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 111, 112, 113, 114, 115.
Offered: Fall, Spring, Summer.

BCT 133 Residential and Industrial HVAC II
4 cr. hrs. 6 periods (2 lec., 4 lab)
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.
Offered: Fall, Spring, Summer.

BCT 134 Residential and Industrial HVAC III
4 cr. hrs. 6 periods (2 lec., 4 lab)
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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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 111, 112, 113, 114, and 115 or concurrent enrollment.
Offered: Spring.

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.
Offered: Fall, Spring.
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; planning, 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.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Spring.

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 147.
Offered: Fall.

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.
Offered: Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Spring.

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.
Offered: Spring.

BCT 160 Roof Mounting for Solar Installations
4 cr. hrs. 4 periods (4 lec.)
Techniques and skills for Photovoltaic (PV) installers to size, design, and install solar panels. Includes an introduction to different types of mounting systems. Also includes site location of panels, orientation to house, shading at the site, weather, roof materials, soil and load bearing capacity.

Offered: Spring.

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, aceways, boxes, and fittings, print reading, and wiring applications.

Prerequisite(s): BCT 111, 112, 113, 114, and 115 or concurrent enrollment.
Offered: Spring, Summer.
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.  
Offered: Fall, Spring, Summer.

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.  
Offered: Spring, Summer.

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 111, 112, 113, 114, and 115.  
Offered: Spring, Summer.

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.  
Offered: Fall.

BCT 183 Residential and Industrial Plumbing III  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
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.  
Offered: Spring, Summer.

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 is preparation for taking the National Electrical Code Certification exam.  
Offered: Fall, Spring, Summer.

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.  
Recommendation: Completion of BCT 111, 112, 113, 114, and 115 before enrolling in this course.  
Information: May be taken two times for a maximum of sixteen credit hours.  
Information: BCT course work or field experience will be necessary for success in this course. See a BCT instructor or department chair for more information.  
Offered: Fall, Spring, Summer.

BCT 199 Introduction to Co-op: Building & Construction Technologies  
1 cr. hrs. 1 periods (1 lec.)  
See Cooperative Education section for description.  
Corequisite(s): BCT 199WK.  
Information: May be taken two times for a maximum of two credit hours.  
Offered: Fall, Spring, Summer.

BCT 199WK Co-op Work: Building and Construction Technologies  
1-8 cr. hrs. 5-40 periods (5-40 lab)  
See Cooperative Education section for description.  
Corequisite(s): BCT 199.  
Information: May be taken two times for a maximum of sixteen credit hours.  
Offered: Fall, Spring, Summer.
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.
Offered: Fall, Spring.

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): GTM 105 or MAT 086 or required score on the Mathematics assessment test.
Recommendation: Completion of BCT 120 before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

BCT 236 Residential and Industrial Plumbing IV
4 cr. hrs. 6 periods (2 lec., 4 lab)
Concepts that apply to plumbing installations. Includes applied math, sizing water supply piping, potable water treatment, and backflow preventers.
Prerequisite(s): BCT 183.
Offered: Fall, Summer.

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.
Offered: Spring.
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.
Offered: Fall, Summer.

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.
Information: BCT coursework or field experience will be necessary for success in this course. See a BCT instructor or department chair for more information.
Offered: Spring.

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.
Offered: Fall, Spring.

BCT 255M Sustainability in Construction Installation
1 cr. hrs. 1 periods (1 lec.)
Fundamentals of green and sustainability construction, safety in the construction and installation of photovoltaic (PV) solar panel mounting systems and tracker sub categories. Includes safety basics, identification of safety hazards, practices and protective equipment needed during PV system installation, and maintenance. Also includes the identification of tools needed and the recommended green sustainable energy efficient choice of materials.

Offered: May not be offered this year, check class schedule.

BCT 255N Train the Trainer for Building Trades
1 cr. hrs. 1 periods (1 lec.)
Teaching skills for building trade leaders and trainers. Includes how to use proven training methods; explore individual learning styles; develop materials, and create lesson plans. Also includes techniques that provide a flexible approach to training delivery, enable trainers to understand the techniques that provide a flexible approach to training delivery, enable trainers to understand the fundamental stages of the learning process, and apply knowledge learned to deliver effective building trade training.

Offered: May not be offered this year, check class schedule.

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.

Offered: May not be offered this year, check class schedule.

BCT 271 Electrical IV
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of BCT 174. Includes distribution equipment, distribution system transformers, electricity in HVAC systems, over current protection, conductor selection and calculations, raceway, box and fitting, and fill requirements.

Prerequisite(s): BCT 174.
Offered: Fall.

BCT 272 Electrical V
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of BCT 272. Includes high voltage/terminations/ splices, load calculations, electronic theory, specialty lighting, and advanced motor maintenance.

Prerequisite(s): BCT 271.
Offered: Summer.

BCT 273 Electrical VI
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of BCT 272. Includes high voltage terminations/ splices, load calculations, electric theory, specialty lighting, and advanced motor maintenance.

Prerequisite(s): BCT 272.
Offered: Fall.
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.
Offered: Spring.

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.
Information: BCT 184 and BCT 284 together is preparation for taking the National Electrical Code certification exam.
Offered: Fall, Spring, Summer.

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.
Offered: Fall.

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.
Offered: Spring.

Business
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

BUS 100 Introduction to Business
3 cr. hrs. 3 periods (3 lec.)
Introduction to business operations in the private enterprise system. Includes contemporary business and its environment, structure of American business, management principles of the organization, people, and production, marketing management, information systems and accounting, and financing the enterprise.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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): MAT 086 or required score on the Mathematics assessment test.
Offered: Fall, Spring, Summer.
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, times series, design of experiments and analysis of variance (ANOVA), and categorical data analysis.

Prerequisite(s): MAT 172 or 173.
Recommendation: CSA 110A.
Information: Basic Excel knowledge is required before enrolling in this course. CSA 110A meets this requirement.
Offered: Fall, Spring, Summer.

BUS 210 International Business

3 cr. hrs. 3 periods (3 lec.)
Introduction to international business, focusing on the importance of cultural, economic, legal, political, sociological, and strategic complexities that emerge when business activities transcend international borders. Includes the terminology of international business and the basic do’s and don’ts within the various foreign business societies.

Recommendation: Completion of BUS 100 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring, Summer.

BUS 250 Entrepreneurship

3 cr. hrs. 3 periods (3 lec.)
Introduction to implementing creative ideas for organizations. Includes types of entrepreneurship, entrepreneurial mind, Timmons model of the entrepreneurial process, resource requirements, financing entrepreneurial ventures, and the business plan.

Prerequisite(s): BUS 100.
Offered: Summer.

BUS 299 Introduction to Co-op: Business

1 cr. hrs. 1 periods (1 lec.)
Principles of job success. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment.

Corequisite(s): BUS 299WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: May not be offered this year, check class schedule.

BUS 299WK Co-op Work: Business

1-8 cr. hrs. 5-40 periods (5-40 lab)
A supervised cooperative work program for students in an occupation related area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.

Corequisite(s): BUS 299.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: Fall, Spring.

Career and Technical Education

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

CTE 210 Methods of Teaching Career and Technical Education

3 cr. hrs. 3 periods (3 lec.)
Introduction to instructional classroom management and assessment strategies pertinent to teaching in the secondary schools. Includes the role and function of the teacher in a CTE classroom, laboratory, or shop, standards-based instruction, constructing lesson plans, assessment, instructional strategies, and serving special needs students.
Offered: Fall, Spring, Summer.
CTE 275 CTE Classroom, Laboratory, and Shop Management
3 cr. hrs. 3 periods (3 lec.)
Introduction to managing the CTE classroom, laboratory, shop and instructional environments. Includes how to create a safe learning environment, design classroom and laboratory procedures, and develop an effective classroom management plan. Also includes how teachers will implement organizational systems to manage work-based learning experiences, student records, learning experiences, student records, supplies, equipment, tools, finances and facilities.
Offered: Fall.

CTE 285 Curriculum Development for Career and Technical Education
3 cr. hrs. 3 periods (3 lec.)
Introduction to the design and use of CTE curriculum. Includes standards, standard indicators, performance objectives, and curriculum mapping. Includes the study of learning styles, designing lessons to encourage appropriate outcomes and behaviors of all learners, questioning techniques, demonstrations, and field trips. Also includes the application requirement to demonstrate the process for developing curriculum for a CTE program including: courses of study, syllabi, lesson plans and assessment.
Offered: Spring.

CTE 288 Operation of Career and Technical Student Organizations
3 cr. hrs. 3 periods (3 lec.)
Introduction to developing student leadership via career and technical student organizations (CTSO). Includes how to elect and train officers, develop an effective program of work, create meaningful agendas, run meetings using parliamentary procedure, and create constitution and bylaws. Includes the intracurricular nature and legal aspects of advising the CTSO. Also includes the creation of a plan for the implementation of a CTSO that is appropriate for the CTE program.
Offered: Summer.

Chemistry
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

CHM 080 Preparation for General Chemistry
3 cr. hrs. 3 periods (3 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): MAT 092.
Information: Designed to prepare students for CHM 151.
Offered: Fall, Spring, Summer.

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; electron transfer; acids, bases, and salts; the liquid state; the gas state; and special topics.
Information: Designed for non-science majors, education majors, and the general public.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Spring.

CHM 123IN Chemistry and Art
4 cr. hrs. 6 periods (3 lec., 3 lab)
Introduction to the relationship between the physical sciences and the visual arts. Includes an overview of art and science, material science applied to art and archaeology, color and art, painting, sculpture, photography, and the dimensions of the relationship between art and science.
Information: This is an integrated version of the course with the lecture and lab taught simultaneously.
Offered: May not be offered this year, check class schedule.

CHM 125IN Consumer Chemistry
4 cr. hrs. 6 periods (3 lec., 3 lab)
An overview of the chemistry of everyday products and processes for the non-science major. Includes the chemistry of toothpaste, deodorants, cosmetics, soaps and detergents, food, toys, paints, plastics and other products commonly found in the kitchen, laundry, bathroom, bedroom, and workshop. Also includes the process of science and the scientific method.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Information: No previous chemistry experience is required.
Offered: May not be offered this year, check class schedule.
CHM 128 Forensic Chemistry
3 cr. hrs. 3 periods (3 lec.)
Practice, evolution, and trends in the use of chemistry and physical science in forensic studies. Includes the study of scientific criminology, scientific methods, applications of chemistry in DNA, crime scene evidence analysis, ballistics and terrorism. Also includes the discussion of implications and effects of these applications on the law, courts, and society.

Corequisite(s): CHM 128LB.
Recommendation: Consent of instructor is recommended before enrolling in this course.
Offered: May not be offered this year, check class schedule.

CHM 128IN Forensic Chemistry
4 cr. hrs. 6 periods (3 lec., 3 lab)
Practice, evolution, and trends in the use of chemistry and physical science in forensics studies. Includes the study of scientific criminology, scientific methods, applications of chemistry in DNA, crime scene evidence analysis, ballistics and terrorism. Also includes the discussion of implications effects of these applications on the law, courts, and society.
Information: Consent of instructor is required before enrolling in this course.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

CHM 128LB Forensic Chemistry Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of CHM 128.
Corequisite(s): CHM 128.
Offered: May not be offered this year, check class schedule.

CHM 130 Fundamental Chemistry
4 cr. hrs. 4 periods (4 lec.)
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): MAT 092 with a grade of C or better, or required score on the mathematics assessment test.
Corequisite(s): CHM 130LB.
Information: Adapted to the needs of students in allied health programs.
Offered: Fall, Spring, Summer.

CHM 130IN Fundamental Chemistry SUN# CHM 1130
5 cr. hrs. 7 periods (4 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): MAT 092 with a grade of C or better, or required score on mathematics assessment test.
Information: Adapted to the needs of students in allied health programs. IN is the integrated version of the course and lab taught simultaneously.
Offered: Fall, Spring, Summer.

CHM 130LB Fundamental Chemistry Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of CHM 130.
Corequisite(s): CHM 130.
Offered: Fall, Spring, Summer.

CHM 140 Fundamental Organic and Biochemistry
4 cr. hrs. 4 periods (4 lec.)
Continuation of CHM 130. 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): CHM 130 with a grade of C or better.
Corequisite(s): CHM 140LB.
Information: Prerequisites may be waived with high school chemistry within the last three years, or consent of instructor.
Information: Adapted to the needs of students in nursing and other health professions.
Offered: Summer.

CHM 140IN Fundamental Organic and Biochemistry SUN# CHM 2230
5 cr. hrs. 7 periods (4 lec., 3 lab)
Continuation of CHM 130. 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): CHM 130 lecture and lab with a grade of C or better.
Information: Prerequisite may be waived with high school chemistry within the last three years or consent of instructor.
Information: Adapted to the needs of students in nursing and other health professions. IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.
CHM 140LB Fundamental Organic and Biochemistry Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of CHM 140.
Corequisite(s): CHM 140.
Offered: Summer.

CHM 151 General Chemistry I
4 cr. hrs. 4 periods (4 lec.)
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): Has both a Math and a Chemistry prerequisite. Minimum Math prerequisite: MAT 122 with a grade of C or better. Chemistry prerequisite: completion of CHM 080 or CHM 130 with grade of C or better or placement into CHM 151 on the Chemistry assessment test.
Corequisite(s): CHM 151LB.
Offered: Fall, Spring.

CHM 151IN General Chemistry I  SUN# CHM 1151
5 cr. hrs. 7 periods (4 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 or 130 with a grade of C or better, or placement into CHM 151 on the Chemistry assessment test, and MAT 122 with a grade of C or better.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

CHM 151LB General Chemistry I Lab  SUN# CHM 1152
1 cr. hrs. 3 periods (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): Completion of MAT 122 with C or better. Completion of CHM 080 or CHM 130 with grade of C or better or placement into CHM 151 on the Chemistry assessment test.
Corequisite(s): CHM 151.
Offered: Fall, Spring.

CHM 152 General Chemistry II
4 cr. hrs. 4 periods (4 lec.)
Continuation of CHM 151. Includes emphasis on certain chemical concepts such as chemical kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry.
Prerequisite(s): MAT 151 and CHM 151 with a grade of C or better.
Corequisite(s): CHM 152LB.
Offered: Fall, Spring, Summer.

CHM 152IN General Chemistry II
5 cr. hrs. 7 periods (4 lec., 3 lab)
Continuation of CHM 151. Includes emphasis on certain chemical concepts such as chemical kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry.
Prerequisite(s): Must have a completed MAT 151 and CHM 151 with a grade of C or better.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

CHM 152LB General Chemistry II Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of CHM 152.
Corequisite(s): CHM 152.
Offered: Fall, Spring, Summer.

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.
Offered: May not be offered this year, check class schedule.
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.  
Offered: May not be offered this year, check class schedule.

CHM 235 General Organic Chemistry I  
4 cr. hrs. 4 periods (4 lec.)  
Fundamentals of organic chemistry. Includes classification, occurrence, synthesis, analysis, stereo-chemistry and reaction mechanisms of important classes of organic compounds, namely alkanes, cycloalkanes, alkenes, alkynes and alkyl halides.  
Prerequisite(s): CHM 152 with a grade of C or better.  
Corequisite(s): CHM 235LB.  
Offered: May not be offered this year, check class schedule.

CHM 235IN General Organic Chemistry I  SUN# CHM 2235  
5 cr. hrs. 7 periods (4 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. Integrates laboratory safety skills and computer software applications related to chemistry.  
Prerequisite(s): Completion of CHM 152 with a grade of C or better.  
Information: IN class is an integrated presentation of CHM 235 and CHM 235LB.  
Offered: Fall, Spring, Summer.

CHM 235LB General Organic Chemistry I Lab  
1 cr. hrs. 3 periods (3 lab)  
Application of the organic chemistry concepts addressed in CHM 235, i.e. classification, occurrence, synthesis, analysis, stereochemistry and reaction to mechanisms of organic compounds, using a wide range of laboratory apparatus and procedures. Integrates laboratory safety skills and computer software related to chemistry.  
Prerequisite(s): Completion of CHM 152 with a grade of C or better.  
Corequisite(s): CHM 235.  
Offered: May not be offered this year, check class schedule.

CHM 236 General Organic Chemistry II  
4 cr. hrs. 4 periods (4 lec.)  
Continuation of CHM 235 focusing on remaining classes of organic compounds, including alkenes, alcohols, ethers and epoxides, aldehydes, ketones, acids, acid derivatives, aromatics and nitrogen containing compounds. Includes an emphasis on synthesis and use of chemical and instrumental methods as means of identification and an introduction to biomolecules and/or polymers.  
Prerequisite(s): Completion of CHM 235 with a grade of C or better.  
Corequisite(s): CHM 236LB.  
Offered: May not be offered this year, check class schedule.

CHM 236IN General Organic Chemistry II  SUN# CHM 2236  
5 cr. hrs. 7 periods (4 lec., 3 lab)  
Continuation of CHM 235, focusing on the 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. Includes an emphasis on synthesis and use of chemical and instrumental methods as means of identification while in a laboratory setting using a wide range of laboratory apparatus and procedures. Integrates laboratory safety skills and computer software applications related to chemistry.  
Prerequisite(s): Completion of CHM 235 with a grade of C or better.  
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.  
Offered: Fall, Spring, Summer.

CHM 236LB General Organic Chemistry II Lab  
1 cr. hrs. 3 periods (3 lab)  
Continuation of CHM 235LB, focusing on the remaining classes of organic compounds addressed in CHM 236, specifically dienes, alcohols, ethers and epoxides, aldehydes, ketones, acids and acid derivatives, aromatics and nitrogen containing compounds in a laboratory setting using a wide range of laboratory apparatus and procedures. Integrates laboratory safety skills and computer software applications related to chemistry.  
Prerequisite(s): Completion of CHM 235 with a grade of C or better.  
Corequisite(s): CHM 236.  
Offered: May not be offered this year, check class schedule.

CHM 290 Chemistry Internship  
1-4 cr. hrs. 1-4 periods (1-4 lec.)  
Internship and work experience in a science field or laboratory. Setting, achieving, and evaluating goals for hands-on learning experiences in sciences. 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.  
Offered: Fall, Spring, Summer.
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.
Information: May be taken three times for a maximum of twelve credit hours.
Offered: Fall, Spring.

Child Development Associate

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Spring.

CDA 114 Collecting, Organizing and Using Teaching Aids
1 cr. hrs. 1 periods (1 lec.)
Survey of several different types of teaching aids used in the early care and education environment for children birth through age eight. Includes identifying what belongs in a developmentally appropriate learning environment for children, how to sort and organize teaching aids according to types, how to incorporate those teaching aids into the various curricula areas of the program and sharing with families through reciprocal relationships. Also includes various types of teaching aids such as individual children’s portfolios, activity card file collection, picture and poster file, media resources, reference materials, professional literature, and community resources.
Offered: Fall.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Spring.
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: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring, Summer.

CDA 161 Principles of Social Competence  
1 cr. hrs. 1 periods (1 lec.)  
*Information: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

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 environment, and family and community involvement.  
*Information: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.

CDA 224 Learning Theories and Cognitive Development Applications  
2 cr. hrs. 2 periods (2 lec.)  
Analysis of how young children grow and learn. Includes egocentrism, cognitive and memory development, concept formation and problem solving skills, and sharing resource with parents.  
*Information: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall.

CDA 229 Child Development Associate Assessment Preparation  
3 cr. hrs. 3 periods (3 lec.)  
Strategies for completion of the CDA Assessment. Includes documentation requirements, resource file, direct assessment application form, and verification visit requirements.  
*Information: Students must have college-level reading and writing skills to be successful in CDA classes.*  
Offered: Fall, Spring, Summer.
CDA 257 Record Keeping for the Family Child Care Provider
1 cr. hrs. 1 periods (1 lec.)
Strategies for the development of a record keeping system to use in child care. Includes operating a small business, and organizing records. Also includes income tax forms, special tax liabilities and responsibilities, and important records to retain.
Information: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Summer.

CDA 258 Family Child Care as a Small Business
1 cr. hrs. 1 periods (1 lec.)
Examination of the aspects of family child care as a small business. Includes the role of the family child care provider, licensing and certification, insurance requirements, development of a business plan, and agreements between parents and providers.
Information: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Summer.

CDA 259 Balancing Work and Family in a Family Child Care Setting
1 cr. hrs. 1 periods (1 lec.)
Strategies for reaching a balance between work and family in the child care setting. Includes establishing an appropriate setting, planning the daily schedule, setting boundaries, keeping a balance in your own life, and communicating with parents. Also includes your role as a liaison between family, child, and parent.
Information: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Fall, Spring, Summer.

CDA 273 Ages and Stages: The Middle Childhood Years
1 cr. hrs. 1 periods (1 lec.)
Examination of the stages of growth and development during the middle childhood years (ages 6 to 8). Includes physical growth, motor development, logical thinking and language skills, and social and emotional growth. Also includes examining developmental concerns and challenges and parental involvement.
Information: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Fall, Spring, Summer.

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: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Spring.

CDA 276 Preparing a NAEYC Classroom Portfolio
3 cr. hrs. 3 periods (3 lec.)
Facilitation of the process of NAEYC Classroom Portfolio preparation. Includes the types of documentation that provide evidence that the classroom implementation meets the NAEYC Accreditation criteria. This is part of the NAEYC Self-Study and Self-Assessment process leading to NAEYC Accreditation.
Information: Students must have college-level reading and writing skills to be successful in CDA classes.
Offered: Spring.

Chinese

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

CHI 101 Elementary Chinese (Mandarin) I SUN# CHI 1101
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.
Offered: Fall, Spring, Summer.
CHI 102 Elementary Chinese (Mandarin) II SUN# CHI 1102
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.
Offered: Fall, Spring.

CHI 201 Intermediate Chinese I SUN# CHI 2201
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.
Offered: May not be offered this year, check class schedule.

CHI 202 Intermediate Chinese II SUN# CHI 2202
5 cr. hrs. 5 periods (5 lec.)
Continuation of CHI 201. Includes additional intermediate selection of grammar structures, intermediate oral, aural, and written transactions, response to complex topics, additional norms, values, and beliefs, and Chinese history and cultural aspects.

Prerequisite(s): CHI 201.
Offered: May not be offered this year, check class schedule.

Clinical Research Coordinator

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.

Prerequisite(s): BIO 160IN or concurrent enrollment.
Information: Introductory class for program core.
Offered: Fall, Spring.

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).

Offered: Fall, Spring.

CRC 225IN Clinical Research Coordinator Lab Skills
2 cr. hrs. 3 periods (1 lec., 2 lab)
Clinical skills training for clinical trial coordinators. Includes research subject communication techniques, medical history review, adverse events, vital signs, EKG procedures, blood collection processes and specimen processing, storage and shipping.

Prerequisite(s): CRC 101, 201, 230, 240, 250.
Information: May be taken concurrently with CRC 250 with permission of instructor.
Offered: Spring.

CRC 230 Introduction to Clinical Research Study Protocol
2 cr. hrs. 2 periods (2 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.
Recommendation: Completion of or concurrent enrollment in CRC 201.
Offered: Fall.
CRC 240 Pharmacology for Clinical Trials
3 cr. hrs. 3 periods (3 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.
Offered: Spring.

CRC 250 Clinical Research Site Coordination and Management
3 cr. hrs. 3 periods (3 lec.)
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, 230, 240.
Offered: Spring.

CRC 270 Research Management for Sponsors and CRO’s
4 cr. hrs. 4 periods (4 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 250.
Offered: Spring.

CRC 289 Clinical Research Coordinator Professional Practice
1 cr. hrs. 2 periods (2 lab)
Preparation for the clinical research coordinator internship with emphasis on applying clinical research project coordination concepts and practices in a simulated research setting. Includes application of the following: 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 101, 201, 225IN, 230, 240, 250.
Offered: May not be offered this year, check class schedule.

CRC 291 Clinical Research Coordinator Internship
1-5 cr. hrs. 5-25 periods (5-25 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 101, 201, 225IN, 230, 240, 250, 289.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken three times for a maximum of five credit hours.
Offered: Fall, Spring.

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.
Information: Course content and performance objectives will be kept on file in the campus curriculum coordinator’s program file.
Offered: May not be offered this year, check class schedule.

Computer Aided Design and Drafting
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

CAD 101 Computer Aided Drafting I
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, hard copy production, and final project.
Information: For individuals with no computer and/or drafting experience.
Offered: Fall, Spring. Summer.
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.
Recommendation: CAD 114 and TEC 100.
Offered: Fall, Spring.

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.
Offered: Spring.

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 and CAD applications, and print analysis.
Offered: Fall and Spring.

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.
Offered: Spring.

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, assemblies, and plotting techniques.
Prerequisite(s): CAD 101.
Information: XYZ coordinate system understanding is required before enrolling in this course.
Offered: Fall, Spring.

CAD 151 Computer Aided Drafting II
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of Computer Aided Drafting I. Includes block attributes, external references, adaptive scaling, 3-D modeling applications, shading and rendering of 3-D models, layer usage, hard copy techniques and procedures, utilization, and intermediate file management procedures.
Prerequisite(s): CAD 101 or IDE 158.
Offered: Fall, Spring, Summer.

CAD 152 Technical Drafting
4 cr. hrs. 6 periods (3 lec., 3 lab)
Basic concepts, techniques, and applications for mechanical drafting. Includes mechanical design fundamentals and standards, advanced Computer Aided Drafting (CAD) applications, three dimensional (3D) solid modeling techniques, and hard copy techniques and procedures.
Prerequisite(s): CAD 101.
Offered: Fall, Spring, Summer.

CAD 153 Electro-Mechanical Drafting and Design
4 cr. hrs. 6 periods (3 lec., 3 lab)
Basic concepts, techniques, and applications for electronic drafting. Includes electronic drafting fundamentals and standards, electronic component and schematic applications, electronics theory, Computer Aided Drafting (CAD) techniques, and file management and hard copy techniques and procedures.
Prerequisite(s): CAD 101.
Offered: Fall, Spring.

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 padring layout, device matching, DRC (design rule check) verification techniques, and LVS (layout versus schematic) verification techniques.
Prerequisite(s): CAD 104.
Offered: Fall, Spring.
CAD 155 Residential Drafting/Design
4 cr. hrs. 6 periods (3 lec., 3 lab)
Beginning level Computer Aided Drafting (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)
Offered: Fall, Spring, Summer.

CAD 157 Introduction to Site Development Drafting 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.
Offered: Fall, Spring, Summer.

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 the basics of 3D parametric software: how to access tools, develop model, build levels and views, create drawing sheets, and plot drawings. Also includes how to integrate knowledge of building systems: site, floor plan, roof plan, building elevations, building and wall sections, and schedules.
Information: For individuals with no BIM experience.
Offered: Fall, Spring.

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 152.
Information: Prerequisites may be waived if equivalent mechanical drawing experience is documented. See CAD instructor or advisor/counselor.
Offered: Fall, Spring.

CAD 196 Independent Study in Computer Aided Drafting: 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.
Information: May be taken three times for a maximum of twelve credits.
Offered: Fall, Spring.

CAD 199 Introduction to Co-op: Computer Aided Drafting
1 cr. hrs. 1 periods (1 lec.)
See Cooperative Education section for description.
Corequisite(s): CAD 199WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: Fall, Spring.

CAD 199WK Co-op Work: Computer Aided Drafting
1-8 cr. hrs. 5-40 periods (5-40 lab)
See Cooperative Education section for description.
Corequisite(s): CAD 199.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: Spring.

CAD 203 Advanced Electro-Mechanical Drafting and Design
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of CAD 153. Includes standards for packaging, fastener library, 3-D sheet-metal enclosures, production drawing sheets, materials and fastening systems for enclosures, and hard copy techniques and procedures. Also includes sheet-metal modeling in AutoCAD 3-D and Inventor.
Prerequisite(s): CAD 153.
Offered: Fall, Spring.
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 padring layout, intermediate device matching, intermediate DRC (design rule check) verification techniques, and intermediate LVS (layout versus schematic) verification techniques.
Prerequisite(s): CAD 154.
Offered: Fall, Spring.

CAD 206 Commercial Drafting and Design: Revit
4 cr. hrs. 6 periods (3 lec., 3 lab)
Computer Aided Drafting (CAD) of a commercial building at the intermediate level. Includes intermediate commercial CAD skills, site, foundation, floor, roof framing, reflected ceiling, mechanical, plumbing, and electrical plans, building and wall sections, building elevations, working drawing coordination, special construction applications, and 3D modeling.
Prerequisite(s): CAD 155.
Offered: Fall, Spring.

CAD 207 Drafting and Design for Land Development: Civil 3D
4 cr. hrs. 6 periods (3 lec., 3 lab)
Computer Aided Drafting (CAD) specific to sites for construction of buildings, roads, and utilities at the intermediate level. 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.
Offered: Fall.

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.
Prerequisite(s): CAD 152 and 172.
Offered: Fall.

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 222.
Offered: Spring.

CAD 242 Advanced Parametric Modeling: SolidWorks
4 cr. hrs. 6 periods (3 lec., 3 lab)
Advanced parametric modeling mechanical concepts, techniques, and problems using SolidWorks. Includes parametric modeling, working drawings, assemblies, and plotting techniques.
Prerequisite(s): CAD 142, 152.
Offered: Fall, Spring.

CAD 247 Transportation Design: MicroStation
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of CAD 127. Includes advanced civil drafting technology incorporating surveying and mapping data using MicroStation. Also includes the creation of digital terrain model, horizontal alignment, profiles, vertical alignment, model roadway, creation of cross sections, earthwork quantities, annotation, reports and use viewing tools to review final roadway project.
Prerequisite(s): CAD 127, 157.
Offered: May not be offered this year, check class schedule.

CAD 252 Introduction to Parametric Modeling: Pro/ENGINEER
4 cr. hrs. 6 periods (3 lec., 3 lab)
Introduction to parametric modeling with Pro/ENGINEER. Includes geometric dimensioning and tolerancing fundamentals and standards, parametric modeling techniques, geometric dimensioning and tolerancing applications, and hard copy techniques and procedures.
Prerequisite(s): CAD 151 and 172.
Information: Solid modeling experience strongly recommended before enrolling in this course.
Offered: Fall, Spring.
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 padring layout, advanced
device matching, advanced DRC (design rule check) verification techniques, and advanced LVS (layout versus schematic)
verification techniques.
Prerequisite(s): CAD 204.
Offered: May not be offered this year, check class schedule.

CAD 256 Advanced Commercial Drafting and Design: Revit
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of CAD 206 at the advanced level using Revit MEP. Includes advanced level CADD skills, advanced level
commercial project programming, advanced level site, foundation, floor, roof framing, mechanical, plumbing, and electrical
plans, building and wall sections, building elevations, working drawing coordination, special construction applications,
model energy code, and 3D modeling.
Prerequisite(s): CAD 206.
Offered: Fall, Spring.

CAD 257 Advanced Drafting and Design for Land Development: 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 drafting 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.
Offered: Spring.

CAD 265 Design and Drafting for Sustainability
4 cr. hrs. 6 periods (3 lec., 3 lab)
Computer Aided Design and Drafting (CADD) applications specific to site and building sustainability. Includes green building
 fundamentals, Geographic Information Systems (GIS), introduction to 3D modeling for analysis, and detailing systems.
Prerequisite(s): CAD 155, 157 and 166.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

CAD 280 Computer Aided Drafting and Design Portfolio
1 cr. hrs. 1 periods (1 lec.)
Identification of portfolio content. Includes project parameters, portfolio presentation, portfolio development, and critique.
Prerequisite(s): CAD 202 or 203 or 204 or 206 or 207 or 222.
Offered: Fall, Spring.

CAD 282 Advanced Parametric Modeling: Pro/ENGINEER
4 cr. hrs. 6 periods (3 lec., 3 lab)
Advanced parametric modeling using Pro/ENGINEER. Includes advanced level parametric modeling applications, shading
and rendering of parametric models, constructing mechanical assemblies, and hard copy techniques and procedures.
Prerequisite(s): CAD 252.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.

CAD 296 Independent Study in Computer Aided Drafting: 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 three times for a maximum of twelve credits.
Offered: Fall, Spring.
Computer Information Systems

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

CIS 100 Introduction to Computers  SUN# CIS 1120
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to computer information systems. Includes hardware, system software, networks, the Internet, e-mail, e-commerce, planning and implementing technology solutions, social and ethical issues, social networking, social engineering, and business application tools.
Offered: Fall, Spring, Summer.

CIS 101 Survey of Information Technology Careers
1 cr. hrs. 1 periods (1 lec.)
Overview to the concepts and opportunities of information technology careers. Includes information technology in the organizational structure, information technology careers, and job market opportunities in the information technology industry.
Recommendation: Completion of STU 109A and STU 109B before enrolling in this course. Students taking CIS 101 should have examined and defined their interests, skills, characteristics, and goals prior to taking this course.
Offered: May not be offered this year, check class schedule.

CIS 103 Microsoft Windows Operating System
4 cr. hrs. 4 periods (4 lec.)
Professional Administration 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.
Offered: Fall, Spring, Summer.

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 connections, network models, popular protocol suites, other network issues, and network operating systems.
Recommendation: Completion of CIS 103 before enrolling in this course.
Offered: Fall, Spring, Summer.

CIS 121 Web Publishing
3 cr. hrs. 3 periods (3 lec.)
Introduction to Web site design using the Hypertext Markup Language (HTML) to author pages containing titles, images, lists, image maps, tables, frames, and Cascading Style Sheets. Includes World Wide Web history and development, web servers and Hypertext Transport Protocol (HTTP), web browsers, HTML standards, document design, HTML lists, designing tables and using frames on a web page, and graphics. May include client-side and/or server-side scripting.
Prerequisite(s): CIS 100.
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.
Offered: Fall, Spring, Summer.

CIS 129 Programming and Problem Solving I
5 cr. hrs. 5 periods (5 lec.)
Introduction to personal and business computer systems. Includes components of a computer system, the Internet, networks, advantages and disadvantages or programming languages, traditional languages, native code and GUI object orientated languages, 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 QBASIC.
Prerequisite(s): MAT 122 or concurrent enrollment.
Offered: Fall, Spring, Summer.

CIS 131 Programming and Problem Solving II
5 cr. hrs. 5 periods (5 lec.)
Continuation of CIS 129. Includes data structures and data representation, procedural abstraction, and complex arrays with structure elements.
Prerequisite(s): CIS 129.
Information: Programming assignments will use the C++ language.
Offered: Fall, Spring.
CIS 132 Introduction to Computer Forensics
4 cr. hrs. 4 periods (4 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.
Offered: Fall.

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 100 and familiarity with the Internet are recommended before enrolling in this course.
Offered: Fall, Spring.

CIS 134 Fundamentals of Wireless Local Area Networks (LANs)
3 cr. hrs. 3 periods (3 lec.)
Introduction to designing, building, maintaining, and troubleshooting wireless local area networks (LANs). Includes wireless networking, how wireless works, deploying a wireless LAN, conducting a site survey, security and vulnerabilities, implementing and managing a wireless LAN, network settings, and personal and metropolitan wide area networks.
Recommendation: Completion of CIS 100 and familiarity with the Internet and computer networks are recommended before enrolling in this course.
Offered: May not be offered this year, check class schedule.

CIS 136 Microcomputer Components
3 cr. hrs. 3 periods (3 lec.)
An overview of the primary components of common microcomputer systems. Includes systems components, systems upgrades, printer selection, installation and maintenance, disk drive selection, additional input/output devices, selecting and configuring a system, and other microcomputer topics.
Offered: Fall, Spring, Summer.

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 100 before enrolling in this course.
Offered: Fall, Spring, Summer.

CIS 141 Introduction to VB.NET
4 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring, Summer.

CIS 142 Introduction to C#
4 cr. hrs. 4 periods (4 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.
Recommendation: Completion of CIS 100 or prior programming experience before enrolling in this course.
Offered: Fall, Spring.

CIS 150 Game Programming I
4 cr. hrs. 4 periods (4 lec.)
Basic concepts of game programming using managed DirectX and C#. Includes getting started with Direct 3D, Direct 3D devices, rendering, meshes, and creating a game.
Prerequisite(s): CIS 142 or corequisite.
Corequisite(s): CIS 142 Course CIS 142.
Offered: Fall, Spring.
CIS 151 Game Programming II  
3 cr. hrs. 3 periods (3 lec.)  
Continuation of CIS 150. Intermediate concepts of game programming using managed DirectX and C#. Includes graphic concepts, High Level Shader, sound, and user input.  
Prerequisite(s): CIS 150.  
Offered: Spring.

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.  
Offered: Fall, Spring.

CIS 170 CISCO I: Networking Fundamentals  
5 cr. hrs. 5 periods (5 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.  
Prerequisite(s): CIS 136.  
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.  
Offered: Fall, Spring, Summer.

CIS 171 CISCO II: Networking Router Technologies  
5 cr. hrs. 5 periods (5 lec.)  
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 exam.  
Prerequisite(s): CIS 170.  
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.  
Offered: Fall, Spring.

CIS 172 CISCO III: Advanced Routing and Switching  
5 cr. hrs. 5 periods (5 lec.)  
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 exam.  
Prerequisite(s): CIS 171.  
Recommendation: Consult instructor for alternative prerequisites before enrolling in this course.  
Offered: Fall, Spring.

CIS 173 CISCO IV: Project Based Learning  
5 cr. hrs. 5 periods (5 lec.)  
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.  
Offered: Fall, Spring.

CIS 182 Introduction to ANSI SQL  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to the American National Standard Institute (ANSI) Structured Query Language (SQL). Includes relational databases, SQL basic 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.  
Offered: Fall, Spring.

CIS 183 Introduction to Extensible Markup Language (XML)  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to Extensible Markup Language (XML) which provides a format for describing data and enables the separation of presentation from data. Includes creating an XML document, binding XML data, document type definition, namespace and schemas, formatting with Cascading Style Sheets, and introduction to Extensible Stylesheet Language Transformation (XSLT).  
Recommendation: Coursework or experience with Hypertext Markup Language (HTML) is strongly recommended before enrolling in this course.  
Offered: May not be offered this year, check class schedule.
CIS 187 Data Processing Projects I  
1-3 cr. hrs. 3-9 periods (3-9 lab)  
Provides practical work experience with academic study. Includes problem solving, job site interpersonal relations, and directed independent studies of computer-related topics. Also includes lab exercises involving operating system tasks, word processing, spreadsheet, electronic mail, and the Internet.  
**Recommendation:** Completion of four courses in the Computer Science program before enrolling in this course.  
Offered: May not be offered this year, check class schedule.  

CIS 199 Introduction to Co-op: Computer Information Systems  
1 cr. hrs. 1 periods (1 lec.)  
See Cooperative Education (CED) section for description.  
**Corequisite(s):** CIS 199WK.  
**Information:** May be taken two times for a maximum of two credit hours.  
Offered: Fall, Spring.  

CIS 199WK Co-op Work: Computer Information Systems  
1-8 cr. hrs. 5-40 periods (5-40 lab)  
See Cooperative Education (CED) section for description.  
**Corequisite(s):** CIS 199.  
**Information:** May be taken two times for a maximum of sixteen credit hours.  
Offered: Spring.  

CIS 220 Novell NetWare Networking and Administration  
4 cr. hrs. 4 periods (4 lec.)  
Administration of microcomputer networks using Novell NetWare. Includes review of networking concepts, defining network objects through directory services, designing the network file system, installing NetWare operating system and workstation client software, managing users, and installing printing. Also includes implementing electronic messaging, designing and implementing login scripts, implementing menus system, and managing the network.  
**Prerequisite(s):** CIS 119.  
**Recommendation:** Consult instructor for alternative prerequisites before enrolling in this course.  
Offered: Fall, Spring.  

CIS 221 Microsoft Windows Server  
4 cr. hrs. 4 periods (4 lec.)  
Knowledge and skills necessary to install, configure, customize, optimize networks, integrate, and troubleshoot Windows server. Includes overview of Windows networking, managing Windows server, Windows components, and Internetworking and Intranetworking. Also includes active directory services, advanced file systems, Windows security, booting Windows, and Windows application servers.  
**Prerequisite(s):** CIS 103.  
**Information:** Preparation for Microsoft certification examination.  
Offered: Fall, Spring.  

CIS 222 Implementing Windows Network Infrastructure  
4 cr. hrs. 4 periods (4 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.  
Offered: Spring.  

CIS 223 Implementing Windows Directory Services  
4 cr. hrs. 4 periods (4 lec.)  
Knowledge and skills to install, configure, and administer Microsoft Windows Active Directory directory services. Includes active directory structure, Active Directory 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.  
Offered: Fall.  

CIS 224 Designing Windows Network Security  
4 cr. hrs. 4 periods (4 lec.)  
Knowledge and skills to analyze business requirements and processes to design a security solution for a Microsoft Windows network. Includes technical requirements, security requirements, security solution on a Windows network, security solution for access between networks, and security for communication channels.  
**Prerequisite(s):** CIS 223.  
**Information:** Preparation for Microsoft certification examination.  
Offered: Spring.
CIS 225 Linux (UNIX) System and Network Administration
4 cr. hrs. 4 periods (4 lec.)
Operations and network administration of the Linux (UNIX) system. Includes background review, basic Linux installation, installing software packages, network file services configuration, SAMBA file and print server, Apache web server, and file transfer protocol (FTP).
Prerequisite(s): CIS 137.
Offered: Fall, Spring, Summer.

CIS 226 Advanced Linux Networking
4 cr. hrs. 4 periods (4 lec.)
Prerequisite(s): CIS 225.
Offered: Fall, Spring.

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, e-mail 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: Completion of CIS 119 before enrolling in this course.
Information: This course prepares students to take the CompTIA Security + Exam.
Offered: Summer.

CIS 229 Protecting Your PC and Network: CounterMeasures to Network
4 cr. hrs. 4 periods (4 lec.)
Intrusion Introduction to networking vulnerabilities within various protocols and operating systems. Includes an overview of cyber crime and security issues, networks and the Internet, assessing and securing a personal computer (PC) system, denial of service attacks, malware, and data encryption. Also includes Internet fraud and security, espionage in cyberspace, cyber detective work, and computer security hardware and software.
Recommendation: Completion of CIS 119 or 170, and 228 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

CIS 235 Advanced Topics in Linux/Unix Security
4 cr. hrs. 4 periods (4 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.
Recommendation: Completion of CIS 225 is recommended before enrolling in this course.
Offered: Fall.

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.NE 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.
Offered: Spring.

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.
Offered: Fall, Spring.
CIS 254 SQL Server Administration
4 cr. hrs. 4 periods (4 lec.)
Introduction to the installation and configuration of the Microsoft Structured Query Language (SQL) Server database management system. Includes server startup and shutdown, database objects, managing security and database files, backing up and restoring databases, planning size requirements, automating administrative tasks, transferring data, and monitoring and maintaining SQL server. Also includes replication, developing applications, the server and the Internet, optimizing performance, creating and managing triggers, data consistency and concurrency, transaction management, and managing and using views.

**Prerequisite(s):** CIS 162.
Offered: May not be offered this year, check class schedule.

CIS 265 The C Programming Language
4 cr. hrs. 4 periods (4 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 250 or concurrent enrollment.
Offered: Fall, Spring.

CIS 266 CGI Programming with PERL
3 cr. hrs. 3 periods (3 lec.)
Development of Common Gateway Interface (CGI) scripts using Practical Extraction and Report Language (Perl). Includes review of Internet technology and web-based services, review of HyperText Markup Language (HTML), introduction to CGI, server side includes, the Perl language, and client-server interaction. Also includes providing predictable web service, form processing, processing cookies, and Perl CGI debugging.

**Prerequisite(s):** CIS 121, 265.
Offered: May not be offered this year, check class schedule.

CIS 269 Data Structures
5 cr. hrs. 5 periods (5 lec.)
Advanced topics in computer science and programming in C. Includes software engineering concepts and theory, review of C, stacks, queues, recursion, dynamic abstract data structures, sort and search algorithms, and graphs and networks.

**Prerequisite(s):** CIS 265.
Offered: Spring.

CIS 273 Advanced Web Development
4 cr. hrs. 4 periods (4 lec.)
Advanced web development including design and implementation of database web application. Includes review of Hypertext Markup language (HTML), Visual InterDev environment, design considerations for web development, introduction to vbScript, JavaScript and Common Gateway Interface (CGI), client-side scripting and validation, script objects and events, use of Java Applets, and use of Active X components. Also includes Dynamic Hypertext Markup Language (DHTML), Cascading Style Sheets (CSS), active server pages and server-side scripting, use of databases with ActiveX Data Objects (ADO), various database types, security issues, and debug and deploy application.

**Prerequisite(s):** CIS 121.
Offered: May not be offered this year, check class schedule.

CIS 274 PHP and MySQL Web Development
4 cr. hrs. 4 periods (4 lec.)
Introduction to PHP programming language and MySQL database system and their application to building entry-level Web applications. Includes writing PHP programs for processing, storing and retrieving data for WEB application as well as examples of code that can be used in real-world interactive WEB applications systems.

**Recommendation:** Completion of CIS 121 and 131 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

CIS 278 C++ and Object-Oriented Programming
5 cr. hrs. 5 periods (5 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.

**Prerequisite(s):** CIS 265.
Information: Completion of CIS 265 or consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.

CIS 279 Java Programming
5 cr. hrs. 5 periods (5 lec.)
Introduction to Object Oriented Programming (OOP) using the Java programming language. Includes writing stand-alone programs and applets. Also includes strings, files, exception processing and threads.

**Recommendation:** Completion of CIS 265 or minimum of one year of C programming experience before enrolling in this course.
Offered: Fall, Spring.
CIS 280 Systems Analysis and Design: Concepts and Tools
4 cr. hrs. 4 periods (4 lec.)
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.
Offered: Fall, Spring.

CIS 281 Systems Analysis and Design: Applications
3 cr. hrs. 3 periods (3 lec.)
Concepts and tools of systems analysis applied to specific projects. Includes performing a project from problem initiation through to implementation using CASE tools, project management software, and appropriate software development tools.
Prerequisite(s): CIS 280.
Offered: Fall, Spring.

CIS 299 Introduction to Co-op: Computer Information Systems
1 cr. hrs. 1 periods (1 lec.)
See Cooperative Education (CED) section for description.
Corequisite(s): CIS 299WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: Spring.

CIS 299WK Co-op Work: Comp Info Systems
1-8 cr. hrs. 5-40 periods (5-40 lab)
Corequisite(s): CIS 299.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: Spring.

Computer Software Applications
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 and MyPima, email basics, and basic word processing skills.
Offered: Fall, Spring, Summer.

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.
Information: CSA 100 meets occupational general education computer and information literacy requirements and is a one credit version of CSA 101.
Offered: Fall, Spring, Summer.

CSA 101 Computer Fundamentals
3 cr. hrs. 4 periods (2 lec., 2 lab)
Overview of computer applications and functions. Includes historical significance of the computer, Internet fundamentals, components of a computer system, spreadsheet, database, and word processing use within a workplace.
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: CSA 101 meets occupational general education computer and information literacy requirements and is a three credit version of CSA 100.
Offered: Fall, Spring, Summer.
CSA 107 Computer Communications and Systems for Business
3 cr. hrs. 4 periods (2 lec., 2 lab)
Overview of computer operating procedures. Includes hardware; software; the Internet and World Wide Web; communications, networks, and servers; database management; computer ethics and issues; information system development; and computer careers.
Prerequisite(s): CSA 101.
Offered: Fall, Spring, Summer.

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.
Recommendation: Completion of MAT 086 or required score on the Compass Mathematics assessment test, completion of CSA 089 or basic computer skills, completion of REA 091 or required score on the Compass Reading assessment test before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 110A Spreadsheets: Microsoft Excel Module A
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Spreadsheets applications using Microsoft Excel at the beginning level. Includes spreadsheet concepts, formulas and functions, formatting worksheets and cells, and working with charts and graphics.
Recommendation: Completion of MAT 086 or required score on the Mathematics assessment test, 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.
Information: CSA 110A, 110B, and 110C together constitute CSA 110.
Offered: Fall, Spring, Summer.

CSA 110B Spreadsheets: Microsoft Excel Module B
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Continuation of CSA 110A. Includes spreadsheet applications using Microsoft Excel at the intermediate level. Also includes Excel Lists, managing multiple worksheets and workbooks, collaborating on a workbook, and developing an Excel application.
Prerequisite(s): CSA 110A.
Information: CSA 110A, 110B, and 110C together constitute CSA 110.
Offered: Fall, Spring, Summer.

CSA 110C Spreadsheets: Microsoft Excel Module C
1 cr. hrs. 1.32 periods (.66 lec., .66 lab)
Continuation of CSA 110B. Includes spreadsheet applications using Microsoft Excel at the advanced level. Also includes data tables and Scenario management, using Solver, importing data, and advanced functions and filtering.
Prerequisite(s): CSA 110B.
Information: CSA 110A, 110B, and 110C together constitute CSA 110.
Offered: Fall, Spring, Summer.

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. OAP 111A or keyboarding by touching at 30 wpm.
Offered: Fall, Spring, Summer.

CSA 120A Word Processing: Word Module A
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Microsoft Word at an introductory level. Includes getting started with Word for Windows, editing a document, enhancing text, formatting a document, and multipage documents.  
Recommendation: CSA 089 or basic computer skills, completion of REA 091 or reading assessment at REA 112.  
Information: CSA 120A, 120B, and 120C together constitute CSA 120.  
Offered: Fall, Spring, Summer.

CSA 120B Word Processing: Word Module B
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Microsoft Word at an intermediate level. Includes templates, themes and styles, mail merge, document comparison and collaboration, and web page creation.  
Prerequisite(s): CSA 120A.  
Information: CSA 120A, 120B, and 120C together constitute CSA 120.  
Offered: Fall, Spring, Summer.
CSA 120C Word Processing: Word Module C  
1 cr. hrs. 1.32 periods (.66 lec., .66 lab)  
Microsoft Word at an advanced level. Includes macros, advanced table techniques, forms, cross references, and indexes.  
Prerequisite(s): CSA 120B.  
Information: CSA 120A, 120B, and 120C together constitute CSA 120.  
Offered: Fall, Spring, Summer.

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: CSA 089 or basic computer skills, completion of REA 091 or satisfactory score on the reading assessment.  
Information: CSA 130A, 130B, and 130C together constitute CSA 130.  
Offered: Fall, Spring, Summer.

CSA 141 Integrated Office Suite  
4 cr. hrs. 5 periods (3 lec., 2 lab)  
Practical applications and concepts using integrated Microsoft Office Software. Includes concepts, functions and features of Word, Excel, Access, PowerPoint, and integrated case studies.  
Prerequisite(s): CSA 101.  
Offered: Fall, Spring, Summer.

CSA 152 Internet Browser: Microsoft Explorer  
2 cr. hrs. 3 periods (1 lec., 2 lab)  
Fundamentals of Microsoft Internet Explorer. Includes introduction to the Internet and the World Wide Web, browsing the Web, customizing the browser, printing and saving Web pages, searching the Web, information resources on the Web, communication and file transferring using the internet, security features, enhancing internet explorer, and ethics and intellectual properties.  
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.  
Offered: Fall, Spring, Summer.

CSA 152A Internet Browser: Microsoft Explorer Module A  
1 cr. hrs. 1.5 periods (.5 lec., 1 lab)  
Fundamentals of Microsoft Internet Explorer at the beginning levels. Includes introduction to the Internet and the World Wide Web, browsing the Web, customizing the browser, printing and saving Web pages, and searching the Web.  
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.  
Information: CSA 152A and 152B together constitute CSA 152.  
Offered: Fall, Spring, Summer.

CSA 152B Internet Browser: Microsoft Explorer Module B  
1 cr. hrs. 1.5- periods (.5 lec., 1 lab)  
Continuation of CSA 152A. Includes fundamentals of Microsoft Internet Explorer at the intermediate level. Also includes locating information resources on the Web, communication and file transferring using the Internet, using security features, and enhancing Internet Explorer.  
Prerequisite(s): CSA 152A.  
Information: CSA 152A and 152B together constitute CSA 152.  
Offered: Fall, Spring, Summer.

CSA 155 Microsoft Expression Web  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
Web site concepts and design using Microsoft Expression Web. Includes web site concepts, web site development, creating and editing web content, using Cascading Style Sheets, optimizing the web site, dynamic web templates and scripting, and legal and usability issues.  
Prerequisite(s): CSA 101.  
Recommendation: Completion of CSA 152 or skills using the Internet and the World Wide Web before enrolling in this course.  
Offered: May not be offered this year, check class schedule.
CSA 159 Introduction to Web Pages Using Dreamweaver
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to web site concepts in a Microsoft Windows environment using Dreamweaver. Includes the principles behind HyperText Markup Language (HTML), Extensible HyperText Markup Language (XHTML), and Cascading Style Sheets (CSS). Also includes the creation and formatting of web pages and inclusion of graphic elements, images, tables, links, forms, layout and printing of web pages.

Recommendation: Completion of CSA 101 prior to enrolling in this course.
Offered: Fall, Spring.

CSA 165 Dreamweaver for Microsoft Windows I
3 cr. hrs. 5 periods (2 lec., 3 lab)
Web site concepts in a Microsoft Windows environment using Dreamweaver. Includes commands and features, integrated file browser, text image file formats, hyperlinks, local web pages, web site functionality, page layout, tables, Dreamweaver help, get and put features, and cascading style sheets.

Recommendation: Completion of CSA 101 before enrolling in this course.
Information: Advanced computer application skill is required before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 166 Dreamweaver for Microsoft Windows II
3 cr. hrs. 5 periods (2 lec., 3 lab)
Advanced concepts of the Macromedia Dreamweaver Web development application. Includes rollovers and navigation bars, libraries, head elements and keyboard shortcuts, stylesheets, frames, layers, history panel, browser targeting and code tools, forms, Macromedia integration, and connections to dynamic data.

Prerequisite(s): CSA 165.
Recommendation: Completion of CSA 101 before enrolling in this course.
Information: Advanced computer application skill is required before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 167 Fireworks for Microsoft Windows
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to Fireworks for Microsoft Windows. Includes the Fireworks environment, creating vector graphics transforming vector images and effects, bitmap images, using text, libraries, optimizing graphics for the Web, hotspot links, slicing and rollovers, vector paths, image effects, advanced rollovers and slicing, symbols, instances, and animation, history panel, and Macromedia integration.

Prerequisite(s): CSA 165.
Recommendation: Completion of CSA 101 before enrolling in this course.
Information: Advanced computer skill is required before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 168 Flash for Microsoft Windows
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to Flash as a Web development tool. Includes the Flash environment, vector vs. bitmap graphics, creating and manipulating objects, history panel, working with text, multiple layers in a movie, creating animation, Flash movie publishing, symbols and instances, organizing large projects interactively in Flash, libraries, working with sound, using ActionScript, testing and publishing a Flash movie, and Macromedia integration.

Prerequisite(s): CSA 165.
Recommendation: Completion of CSA 101 before enrolling in this course.
Information: Advanced computer application skill is required before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 169 Dreamweaver Planning and Search Engine Optimization
3 cr. hrs. 5 periods (2 lec., 3 lab)
Advanced web site concepts in the Microsoft Windows environment using Dreamweaver. Includes how to identify the audience, planning web pages, and web site accessibility. Also includes search engine optimization and preparing a site to be seen on search engines.

Recommendation: Completion of CSA 101 before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.
CSA 170A Database: Access Module A
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Microsoft Access at the beginning level. Includes an overview of Access, creating tables, working with tables, creating and using select queries, creating and using forms, creating and using reports, and creating a report that contains totals.

**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.

**Information:** CSA 170A, 170B, and 170C together constitute CSA 170.

**Offered:** Fall, Spring, Summer.

CSA 170B Database: Access Module B
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
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.

**Prerequisite(s):** CSA 170A.

**Information:** CSA 170A, 170B, and 170C together constitute CSA 170.

**Offered:** May not be offered this year, check class schedule.

CSA 170C Database: Access Module C
1 cr. hrs. 1.32 periods (.66 lec., .66 lab)
Microsoft Access at the advanced level. 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 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.

**Prerequisite(s):** CSA 170B.

**Information:** CSA 170A, 170B, and 170C together constitute CSA 170.

**Offered:** May not be offered this year, check class schedule.

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.

**Offered:** Fall, Spring, Summer.

CSA 182A Microsoft Windows: Current Version Module A
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Overview of the Microsoft Windows operating system. Includes introduction to Windows, active desktop, multitasking, and Windows help features.

**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.

**Information:** CSA 182A, 182B, and 182C together constitute CSA 182.

**Offered:** May not be offered this year, check class schedule.

CSA 182B Microsoft Windows: Current Version Module B
1 cr. hrs. 1.34 periods (.67 lec., .67 lab)
Continuation of CSA 182A. Includes Windows Explorer, file management, Windows accessories, and exchanging data between programs.

**Prerequisite(s):** CSA 182A.

**Information:** CSA 182A, 182B, and 182C together constitute CSA 182.

**Offered:** May not be offered this year, check class schedule.

CSA 182C Microsoft Windows: Current Version Module C
1 cr. hrs. 1.32 periods (.66 lec., .66 lab)
Continuation of CSA 182B. Includes print management, control panel, customizing Windows, and networking with Windows.

**Prerequisite(s):** CSA 182B.

**Information:** CSA 182A, 182B, and 182C together constitute CSA 182.

**Offered:** May not be offered this year, check class schedule.

CSA 207 Microsoft Publisher
3 cr. hrs. 4 periods (2 lec., 2 lab)
Desktop publishing for administrative support personnel. Includes a variety of desktop publishing software, terms and concepts, text, graphics, page format, other features, and basic design.

**Prerequisite(s):** CSA 120 or 120A and 120B.

**Offered:** May not be offered this year, check class schedule.
CSA 210 Microsoft Excel Fundamentals
2 cr. hrs. 4 periods (1 lec., 3 lab)
Basic and intermediate functions and features of Microsoft Excel. Includes cells and cell content, data analysis, formula calculations, graphics, workgroup collaborations, format and print worksheets, and managing and modifying workbooks. Also includes preparation for the Microsoft Office Specialist (MOS) Excel Certification.
Information: Completion of CSA 089, CSA 100, or basic computer skills, and completion of REA 091 or testing above REA 091 on the Reading assessment test before enrolling in this course.
Offered: Fall, Spring, Summer.

CSA 265 Advanced Microsoft Access
3 cr. hrs. 4 periods (2 lec., 2 lab)
Advanced database concepts, to include how to import and retrieve data, creation of complex queries and using the SQL view; creation of complex forms, reports, and user interface; use of the VBA interface, connecting to the Web, and security within a Microsoft Access database.
Prerequisite(s): CSA 170.
Information: Advanced computer application skills necessary.
Offered: Fall, Spring, Summer.

CSA 266 Dreamweaver for Microsoft Windows III
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to advanced concepts of the Macromedia Dreamweaver for Databases. Includes database design review, recordsets, retrieving data, making data and images dynamic, live data, HTML, updating forms, templates, security, and multiple-page applications.
Prerequisite(s): CSA 166.
Recommendation: Completion of CSA 101 and 170 before enrolling in this course.
Offered: Fall, Spring, Summer.

Cooperative Education
For courses numbered 098, 198, 298, see “Topic Courses” on page 286
CED 199 Introduction to Co-Op: Liberal Arts
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): CED 199WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: May not be offered this year, check class schedule.

CED 199WK Co-op Work: Liberal Arts
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): CED 199.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: May not be offered this year, check class schedule.

Crime Scene Management
For courses numbered 098, 198, 298, see “Topic Courses” on page 286
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.
Offered: Fall, Spring.
**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.
Offered: Fall, Spring.

**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.
Offered: Fall, Spring.

**CSM 103 Latent Processing**
1 cr. hrs. 1 periods (1 lec.)
Focuses on the 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.
Offered: Fall, Spring.

**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.
Offered: Fall, Spring.

**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.
Offered: Fall, Spring.

**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.
Offered: Fall, Spring.

**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.
Offered: Fall, Spring.

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**Culinary Arts**

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**CUL 100 Culinary Bootcamp**
3 cr. hrs. 3 periods (3 lec.)
Intensive introduction to the fundamentals of cooking that covers kitchen operation and culinary techniques. Includes instruction in kitchen skills; equipment and utensils; use and storage of ingredients; and safety precautions. Also includes demonstrations of training in 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 sauce preparation. Also includes instruction in culinary and kitchen terminology.
Information: Students who enter the AAS program in Culinary Arts may use this course as an elective.
Offered: Summer
CUL 101 Principles of Restaurant Operations
3 cr. hrs. 3 periods (3 lec.)
Fundamentals of operating and managing small and large restaurants. Includes concept development, menu development, budgeting and controlling costs, financing and leasing, legal and tax matters, defining jobs and organizing the restaurant, staffing the restaurant, employment training and development, equipment in the kitchen, restaurant marketing, marketing plan, sales and promotion, food purchasing, and customer relations.
Offered: Fall, Spring.

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, carbohydrates, lipids, proteins, vitamins, minerals, water, energy metabolism/balance, and nutrition principles and the life cycle.
Offered: Fall, Spring.

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, sanitation in the purchasing, receiving and storage of food, sanitation in the preparation and service of food, 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.
Offered: Fall, Spring.

CUL 126 Applied Mathematics for Food
1 cr. hrs. 1 periods (1 lec.)
Fundamentals of cost controls. Includes an introduction to profit and loss, balance sheet and net worth statements, measurement and conversions, recipe conversions, unit and recipe costing, yield tests, inventory and food cost percentages, controlling food costs, and menu pricing.
Offered: May not be offered this year, check class schedule.

CUL 130 Hot Foods I
3 cr. hrs. 3 periods (3 lec.)
Introduction to all facets of hot foods. Includes classical stocks, sauces, soups, liaisons: roux and starches, cooking techniques, preparation of vegetables, and butchering.
Corequisite(s): CUL 150, CUL 160.
Offered: Fall, Spring.

CUL 140 Culinary Principles
3 cr. hrs. 3 periods (3 lec.)
Introduction to the background of culinary work. Includes professionalism, job responsibilities, tools and equipment, knives and knife skills, stocks, sauces, principles of cooking, food service vocabulary, then menu, food tasting, herbs and spices, chocolate, and vegetables.
Offered: Fall, Spring.

CUL 150 Garde Manger
3 cr. hrs. 3 periods (3 lec.)
Introduction to the fundamentals of Garde Manger. Includes care of equipment, dressings: emulsified/non-emulsified, knife skills, basic sandwiches, herbs and spices, salad greens, and commercial cooking techniques.
Corequisite(s): CUL 130, CUL 160.
Offered: Fall, Spring.

CUL 153 Cakes
1 cr. hrs. 1 periods (1 lec.)
Introduction to the art of cake baking. Includes the ingredients, preparation, and baking of cakes. Also includes icings, decorations, and fillings.
Offered: May not be offered this year, check class schedule.

CUL 156 Pies
1 cr. hrs. 1 periods (1 lec.)
Introduction to the art of baking pies. Includes a variety of basic pastry doughs for flaky pies and sweet or savory tarts. Also includes pie mixing, shaping, baking, plating, and presentation.
Offered: May not be offered this year, check class schedule.
**CUL 160 Bakery and Pastry Production I**  
3 cr. hrs. 3 periods (3 lec.)  
Theory and practice of operating a bakery or pastry shop in a hotel or restaurant kitchen. Includes planning, ordering and scheduling for bakeshop production, safety and sanitation, bakery and pastry vocabulary, ingredients, yeast breads, quick breads, quick breads, creams and custards, dough, cakes, filling, and frostings, cookies and brownies, and elementary plating, decorating and garnishing techniques.  
Corequisite(s): CUL 130, CUL 150.  
Offered: Fall, Spring.

**CUL 161 Cake Decorating and Candy Making**  
3 cr. hrs. 4 periods (2 lec., 2 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 wedding cakes and holiday delectables.  
Offered: May not be offered this year, check class schedule.

**CUL 162 Art of Chocolate**  
1 cr. hrs. 1.5 periods (.5 lec., 1 lab)  
Introduction to chocolate used in the culinary arts. Includes an introduction and history of chocolate; truffles, dough and batters; and molded and free form art work.  
Offered: May not be offered this year, check class schedule.

**CUL 163 Sauces**  
3 cr. hrs. 3 periods (3 lec.)  
Concepts, skills, and techniques for sauce creation. Includes how to prepare stocks and sauces in a traditional manner and describe the uses in classic and contemporary kitchens. Also includes how to identify and appropriately use liaisons.  
Offered: May not be offered this year, check class schedule.

**CUL 166 Gluten-Free Baking**  
1 cr. hrs. 1 periods (1 lec.)  
Introduction to the art of gluten-free baking. Includes gluten-free breads, desserts, and pizza. Also includes mixing, shaping, baking, plating, and presentation.  
Offered: May not be offered this year, check class schedule.

**CUL 170 Dining Room Operations**  
2 cr. hrs. 2 periods (2 lec.)  
Theory and practice of operating a casual dining room preparation and guest service, proper etiquette for service and clearing, wine and beverage sales and service, salesmanship, and serving the public.  
Offered: Fall.

**CUL 180 Food in History**  
3 cr. hrs. 3 periods (3 lec.)  
History of foodstuffs, the story of cuisine, and the social history of eating. Includes collecting, gathering and hunting foodstuffs, stock-breeding and farming, sacramental foods, the economy of food markets, the era of merchants, Columbus, Cortez and the new world food discoveries, and professional food preparation.  
Offered: Fall, Spring.

**CUL 185 Catering Operations I**  
2 cr. hrs. 2 periods (2 lec.)  
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.  
Offered: Fall, Spring.

**CUL 199 Introduction to Co-op: Culinary Arts**  
1 cr. hrs. 1 periods (1 lec.)  
See Cooperative Education section for description.  
Offered: May not be offered this year, check class schedule.

**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 a related occupation area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.  
Information: May be taken three times for a maximum of nine credit hours.  
Offered: Fall, Spring.

**CUL 210 Menu Planning**  
2 cr. hrs. 2 periods (2 lec.)  
Principles and techniques of menu planning and restaurant design for food service operations. Includes designing a facility, designing a kitchen, determining equipment needs, developing a cost effective menu, ambiance and food, and inventory control procedures.  
Offered: May not be offered this year, check class schedule.
CUL 230 Hot Foods II
3 cr. hrs. 3 periods (3 lec.)
Hot food preparation and service in a contemporary kitchen. Includes contemporary sauce making, vegetables, grains, and starches, natural liaisons, cooking techniques, food plating, and sanitation procedures and techniques.
Corequisite(s): CUL 250, CUL 260.
Offered: Fall, Spring.

CUL 251 International Cuisine: World of Flavor
3 cr. hrs. 3 periods (3 lec.)
Concepts, skills, and techniques for global cuisine. Includes ingredients and foods from around the world. Also includes culinary techniques that incorporate cultures and food traditions from Latin America, the Mediterranean, Asia, Europe, and United States regions.
Corequisite(s): CUL 230, CUL 260.
Offered: Fall, Spring.

CUL 260 Bakery and Pastry Production II
3 cr. hrs. 3 periods (3 lec.)
Advanced theory and practice of operating a bakery or pastry shop in a hotel or restaurant kitchen. Includes planning, ordering, and scheduling for bakeshop production, safety and sanitation, bakery and pastry vocabulary, advanced yeast breads, classic French pastries, ice cream and frozen desserts, assembling pastries, pastry garnishes, and complex plated desserts.
Prerequisite(s): CUL 160.
Corequisite(s): CUL 230, CUL 251.
Offered: Fall, Spring.

CUL 261 Advanced Cake Decorating and Candy Making
3 cr. hrs. 4 periods (2 lec., 2 lab)
Advanced principles and methods of cake decorating and candy making. Includes flower design, gum paste, airbrush, photo transfer, fondant, and chocolate artistry. Also includes advanced techniques for creating cakes for wedding and special occasions.
Prerequisite(s): CUL 161.
Offered: May not be offered this year, check class schedule.

Dance
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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, and developing the craft.
Information: May be taken four times for a maximum of eight credit hours.
Offered: Fall, Spring, Summer.

DNC 116 Dance Improvisation
2 cr. hrs. 3 periods (1 lec., 2 lab)
Exploration of spontaneous dance movement based on selected criteria or structures. Includes principles of improvisation, spatial awareness, basic elements of movement, vocabulary, creative decision making, and introduction of choreographic devices.
Information: Completion of two or more of the following courses or consent of instructor before enrolling in this course: DNC 150, 166 or 219.
Information: May be taken four times for a maximum of eight credit hours.
Offered: May not be offered this year, check class schedule.

DNC 130 Tap Dance I
2 cr. hrs. 3 periods (1 lec., 2 lab)
Introduction to tap dancing. Includes class protocol, warm-up, standing and center floor work, locomotor work, elements and developing the craft.
Information: May be taken four times for a maximum of eight credit hours.
Offered: Fall, Spring.
**DNC 131 Tap Dance II**
2 cr. hrs. 3 periods (1 lec., 2 lab)
Continuation of DNC 130. Includes tap dance technique at an intermediate level, class protocol, warm-up, standing and center floor work, locomotor work, elements, and developing the craft.

*Prerequisite(s):* DNC 130.
*Information:* May be taken four times for a maximum of eight credit hours.
*Offered:* Fall.

**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 four times for a maximum of eight credit hours.
*Offered:* Fall, Spring, Summer.

**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 four times for a maximum of eight credit hours.
*Offered:* Fall.

**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 four times for a maximum of eight credit hours.
*Offered:* Spring.

**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 four times for a maximum of eight credit hours.
*Offered:* Fall, Spring, Summer.

**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 center floor work, locomotor work, elements, and developing the craft.

*Prerequisite(s):* DNC 166.
*Information:* May be taken four times for a maximum of eight credit hours.
*Offered:* Fall.

**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 four times for a maximum of eight credit hours.
*Offered:* Spring.

**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 116.
*Information:* Prerequisites may be waived with consent of instructor.
*Information:* May be taken four times for a maximum of eight credit hours.
*Offered:* Spring.
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.  
Offered: Fall.

DNC 215 Teaching Methods of Dance I  
3 cr. hrs. 3 periods (3 lec.)  
Instruction on how to teach dance to those from preschool age through 8th grade. Includes elements of dance, developmental stages, classroom management, lesson structure, use of creative movement in the school curriculum, and delivery of lesson plans. Also includes incorporating federal and Arizona standards for dance education academic curriculum for this age group.  
Information: Completion of two of the following courses is required before enrolling in this class: DNC 150, 151, 152, 166, 167, 168, 219, 220, 221.  
Offered: May not be offered this year, check class schedule.

DNC 216 Teaching Methods for Dance II  
3 cr. hrs. 3 periods (3 lec.)  
Instruction of how to teach dance to those from 9th grade through 12th grade. Includes elements of dance, developmental stages, classroom management, lesson structure, use of creative movement in the school curriculum, delivery of lesson plans, working with special populations, and transfer of knowledge to other dance forms.  
Prerequisite(s): DNC 215.  
Offered: May not be offered this year, check class schedule.

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 four times for a maximum of eight credit hours.  
Offered: Fall, Spring.

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 four times for a maximum of eight credit hours.  
Offered: Spring.

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 four times for a maximum of eight credit hours.  
Offered: Spring.

DNC 230 Rhythms for Dance  
2 cr. hrs. 2 periods (2 lec.)  
Exploration of the elements of music and music structures and their relationship to dance. Includes musical composition forms, rhythmic dance accompaniment, musical instruments, musical scores, and creation of dance accompaniment.  
Prerequisite(s): DNC 150 or 166 or 219.  
Offered: Summer.

DNC 269 Dance Production and Performance  
3 cr. hrs. 6 periods (6 lab)  
Practical experience in all aspects of taking a dance piece from basic choreography and creating a professional performance. Includes rehearsal/performance process, responsibilities of a performer and a choreographer, performance skills, choreographic review, costuming, make-up, sets, 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.  
Information: May be taken four times for a maximum of twelve credit hours.  
Offered: Fall, Spring.
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.  
Offered: Summer.

DNC 285 Technology for Dance  
2 cr. hrs. 2 periods (2 lec.)  
Survey of the expanding field of technology as it pertains to the study and performance of dance. Includes overview of technology in dance, dance technologist roles and responsibilities, application of technology, dance computer programs, videotaping and documenting dance, and creating a dance performance art piece.  
Offered: May not be offered this year, check class schedule.

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: May be taken four times for a maximum of twelve credit hours.  
Information: Consent of instructor is required before enrolling in this class.  
Offered: May not be offered this year, check class schedule.

Dental Assisting Education

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

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 and psychology, vital signs, communication in the dental environment, job entry skills, and 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 165LB.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall.

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, and ethics and jurisprudence.  
Corequisite(s): DAE 159, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LB.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall.

DAE 161 Biomedical Dental Science  
3 cr. hrs. 3 periods (3 lec.)  
The biosciences as they relate to the oral cavity. Includes anatomy, physiology, microbiology, oral pathology, and nutrition as each affects total dental health.  
Corequisite(s): DAE 159, DAE 160, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LB.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall.

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 and their use 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 165LB.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall.

DAE 162LB Dental Assisting I Lab  
1 cr. hrs. 3 periods (3 lab)  
This is the Lab portion of DAE 162.  
Corequisite(s): DAE 159, DAE 160, DAE 161, DAE 162, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LB.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall.
DAE 163 Oral Radiography
2 cr. hrs. 2 periods (2 lec.)
Introduction to dental roentgenography as a diagnostic aid. Includes radiation protection, dental film, film processing, digital radiography, identification of anatomical landmarks for mounting and interpretation, exposure techniques, and principles of supplementary film.
**Corequisite(s):** DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LB.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Fall.

DAE 163LC Oral Radiography Clinical Lab
1 cr. hrs. 3 periods (3 lab)
This is the Clinical Lab portion of DAE 163.
**Corequisite(s):** DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 164, DAE 164LB, DAE 165, DAE 165LB.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Fall.

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 and restorative materials; dental cements; impression materials; gypsum products; miscellaneous dental materials; and 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 164LB, DAE 165, DAE 165LB.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Fall.

DAE 164LB Dental Materials Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of DAE 164.
**Corequisite(s):** DAE 159, DAE 160, DAE 161, DAE 162, DAE 162LB, DAE 163, DAE 163LC, DAE 164, DAE 164LB, DAE 165, DAE 165LB.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Fall.

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 165, DAE 165LB.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Fall.

DAE 165LB Dental Assisting Procedures Clinical I
1 cr. hrs. 4 periods (4 lab)
This is the clinical lab portion of DAE 165.
**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.
**Offered:** Fall.

DAE 166 Dental Assisting II
3 cr. hrs. 3 periods (3 lec.)
Principles and techniques of dental assisting. Includes pharmacology and therapeutics, techniques and procedures for emergency medical/dental care as applied to dental assisting, and dental office inventory control.
**Prerequisite(s):** DAE 159, 160, 161, 162/162LB, 163/163LC, 164/164LB, 165/165LB.
**Corequisite(s):** DAE 167, DAE 169, DAE 169LC.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Spring.

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, 165/165LB.
**Corequisite(s):** DAE 166, DAE 169, DAE 169LC.
**Information:** Consent of program coordinator is required before enrolling in this course.
**Offered:** Spring.
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, 165/165LC.  
Corequisite(s): DAE 166, DAE 167, DAE 169LC.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Spring.  

DAE 169LC Dental Assisting Procedures Clinical II  
6 cr. hrs. 24 periods (24 lab)  
This is the clinical lab portion of DAE 169.  
Prerequisite(s): DAE 159, 160, 161, 162/162LB, 163/163LC, 164/164LB, 165/165LB.  
Corequisite(s): DAE 166, DAE 167, DAE 169.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Spring.  

Dental Hygiene  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

DHE 101 Dental Hygiene I  
2 cr. hrs. 2 periods (2 lec.)  
Introduction to the procedures used in the practice of dental hygiene at the beginning level. Includes professionalism and ethics, infection control, body mechanics/ergonomics, evaluation of patient medical and dental history, assessment data, and instrumentation. Also includes removal of soft deposits, fluorides, clinical procedures, and diversity of patient populations. Also includes a laboratory involving practicing dental hygiene procedures on student partners.  
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.  
Offered: Fall.  

DHE 101LC Dental Hygiene I Clinical  
3 cr. hrs. 12 periods (12 lab)  
This is the clinical lab portion of DHE 101.  
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.  
Offered: Fall.  

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, tooth identification, 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.  
Offered: Fall.  

DHE 104LB Dental and Oral Morphology Lab  
1 cr. hrs. 3 periods (3 lab)  
This is the lab portion of DHE 104.  
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.  
Offered: Fall.
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, and 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.
Offered: Fall.

DHE 112 Preventive Dentistry and Nutrition
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, oral hygiene instruction, dentin sensitivity, demineralization and remineralization, and chemotherapeutics. Also includes tobacco cessation, diet and nutrition, chronic health conditions, protein for systemic and oral health, lipids in health and disease, and mineral and mineralization.
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.
Offered: Fall.

DHE 116 Oral Radiography
2 cr. hrs. 2 periods (2 lec.)
Principles of dental radiography as a diagnostic aid. Includes radiation production, biology, 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.
Offered: Fall.

DHE 116LC Oral Radiography Clinic
1 cr. hrs. 4 periods (4 lab)
This is the clinical lab portion of 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.
Offered: Fall.

DHE 119 Periodontology
1 cr. hrs. 1 periods (1 lec.)
Survey of periodontology comprised of the etiology, diagnosis, and prognosis of periodontal disease. Includes an introduction and historical background, the normal periodontium, etiology of periodontal diseases, classification of periodontal disease, systemic factors, and current periodontal-related research applications.
Prerequisite(s): DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.
Corequisite(s): 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.
Offered: Spring.

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, 116/116LC.
Corequisite(s): DHE 119, 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.
Offered: Spring.
**DHE 122 Pharmacology**  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to the theory of pharmacology as it relates to dentistry. Includes identification of drugs which affect, or are affected by, dental treatment.  
**Prerequisite(s):** DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.  
**Corequisite(s):** DHE 119, DHE 120, 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.  
**Offered:** Spring.

**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, cements, impression materials, gypsum products, and miscellaneous dental materials. Also includes gold and gold casting procedures, whitening tray fabrication, and review of national board content relating to dental materials.  
**Prerequisite(s):** DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.  
**Corequisite(s):** DHE 119, DHE 120, DHE 122, 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.  
**Offered:** Spring.

**DHE 132LB Dental Materials Lab**  
1 cr. hrs. 3 periods (3 lab)  
This is the lab portion of DHE 132.  
**Prerequisite(s):** DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.  
**Corequisite(s):** DHE 119, DHE 120, DHE 122, 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.  
**Offered:** Spring.

**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, 116/116LC.  
**Corequisite(s):** DHE 119, DHE 120, DHE 122, 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.  
**Offered:** Spring.

**DHE 150LB Dental Hygiene II Lab**  
.5 cr. hrs. 1.5 periods (1.5 lab)  
This is the lab portion of DHE 150.  
**Prerequisite(s):** DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.  
**Corequisite(s):** DHE 119, DHE 120, DHE 122, DHE 132, DHE 132LB, DHE 150, DHE 150LC.  
**Information:** Same as DHE 150.  
**Offered:** Spring.

**DHE 150LC Dental Hygiene II Clinical**  
3 cr. hrs. 12 periods (12 lab)  
This is the clinical lab portion of DHE 150.  
**Prerequisite(s):** DHE 101/101LC, 104/104LB, 107, 112, 116/116LC.  
**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.  
**Offered:** Spring.
DHE 155LC Clinical Dental Hygiene Applications
1-2 cr. hrs. 4-8 periods (4-8 lab)
Application of dental hygiene skills on a variety of patients with advanced beginner care plans at the advanced beginner level. Includes instrumentation and clinical procedures.

Prerequisite(s): DHE 119, 120, 122, 132/132LB, 150/150LB/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.

Offered: May not be offered this year, check class schedule.

DHE 160LC Clinical Skills Enhancement I
1-4 cr. hrs. 4-16 periods (4-16 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 eight credit hours.

Offered: Fall, Spring.

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: 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.

Offered: Fall, Spring.

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, 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/150LC.

Corequisite(s): 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.

Offered: Fall.

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.

Prerequisite(s): DHE 119, 120, 122, 132/132LB, 150/150LB/150LC.

Corequisite(s): DHE 208, 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.

Offered: Fall.

DHE 209 Ethics and Practice Management
1 cr. hrs. 1 periods (1 lec.)
Ethical theories and ethical principles and their application to the practice of dental hygiene. Includes the business the dentistry, dental hygiene career opportunities, ethics, and jurisprudence.

Prerequisite(s): DHE 155LC.

Corequisite(s): DHE 208, DHE 208LC, 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.

Offered: Fall.

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, implant maintenance, occlusal evaluation and adjustment, and reevaluation of treatment and maintenance. Also includes periodontal healing, antimicrobials, antibiotics, and surgical and nonsurgical procedures.

Prerequisite(s): DHE 208/208LC, 209, 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.

Offered: Spring.
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.
Prerequisite(s): DHE 208/208LC, 209, 250/250LC.
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 part B portion of DHE 213.
Prerequisite(s): DHE 208/208LC, 209, 250/250LC.
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.
Offered: Spring.

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, 250/250LC.
Corequisite(s): DHE 213, DHE 213CA, DHE 216CB, 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.
Offered: Spring.

DHE 250 Dental Hygiene III
3 cr. hrs. 3 periods (3 lec.)
Continuation of DHE 150/150LC. 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, 150/150LC.
Corequisite(s): DHE 208, DHE 208LC, DHE 209, 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.
Offered: Fall.

DHE 250LC Dental Hygiene III Clinical
4 cr. hrs. 16 periods (16 lab)
This is the clinical lab portion of DHE 250.
Prerequisite(s): DHE 119, 120, 122, 132/132LB, 150/150LC.
Corequisite(s): DHE 208, DHE 208LC, DHE 209, 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.
Offered: Fall.

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 regional and state exam preparation, advanced instrumentation, and advanced ultrasonic insertions and techniques.
Prerequisite(s): DHE 208/208LC, 209, 250/250LC.
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.
Offered: Fall.

DHE 255LC Dental Hygiene IV Clinical
4 cr. hrs. 16 periods (16 lab)
This is the clinical lab portion of DHE 255.
Prerequisite(s): DHE 208/208LC, 209, 250/250LC.
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.
Offered: Fall.
DHE 260LC Clinical Skills Enhancement II
1-4 cr. hrs. 4-16 periods (4-16 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 eight credit hours.
Offered: Fall, Spring.

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: 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.
Offered: Fall, Spring.

Dental Laboratory Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Corequisite(s): DLT 101LB.
Information: Consent of program director is required before enrolling in this course.
Offered: Fall.

DLT 101LB Dental Morphology Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of DLT 101.
Corequisite(s): DLT 101.
Offered: Fall.

DLT 102 Non-Metallic Dental Materials
3 cr. hrs. 3 periods (3 lec.)
Prerequisite(s): DLT 101 or concurrent enrollment.
Information: Consent of program director is required before enrolling in this course.
Offered: Fall.

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 reline.
Prerequisite(s): DLT 101 or concurrent enrollment.
Corequisite(s): DLT 103LB.
Information: Consent of program director is required before enrolling in this course.
Offered: Fall.

DLT 103LB Complete Dentures Lab
3 cr. hrs. 9 periods (9 lab)
This is the Lab portion of DLT 103.
Corequisite(s): DLT 103.
Offered: Fall.
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.
Corequisite(s): DLT 104LB.

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

Offered: Spring.

DLT 104LB Dental Occlusion Lab
2 cr. hrs. 6 periods (6 lab)
This is the Lab portion of DLT 104.
Corequisite(s): DLT 104.

Offered: Spring.

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 or concurrent enrollment.
Corequisite(s): DLT 105LB.

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

Offered: Spring.

DLT 105LB Partial Denture Construction Lab
3 cr. hrs. 9 periods (9 lab)
This is the Lab portion of DLT 105.
Corequisite(s): DLT 105.

Offered: Spring.

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, 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 or concurrent enrollment.
Corequisite(s): DLT 106LB.

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

Offered: Spring.

DLT 106LB Orthodontic Appliances Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of DLT 106.
Corequisite(s): DLT 106.

Offered: Spring.

DLT 108 Laboratory Management
3 cr. hrs. 3 periods (3 lec.)
Examination of the principles of dental laboratory management. Includes blood born pathogens, infection control guidelines and procedures, Occupational Safety and Health Administration (OSHA) regulations for dental laboratories, 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 or concurrent enrollment.

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

Offered: Spring.
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, functional occlusion in wax crown and bridge patterns and in crown and bridge metal castings, spruing, investing, and casting crown and bridge patterns, and repairs and soldering.

Prerequisite(s): DLT 101.
Corequisite(s): DLT 201LB.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DLT 201LB Dental Laboratory I Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of DLT 201.
Corequisite(s): DLT 201.
Offered: May not be offered this year, check class schedule.

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, physical and chemical properties of dental alloys, weights, measures, and calculations, alloy processing, equipment calibration, metal treatment and torch techniques, electro-polisher and electrolyte solution operation and safety procedures, and metal sensitivities and allergies.

Prerequisite(s): DLT 101.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

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, waxing, seating, finishing, and evaluation of fixed single tooth restorations and bridgework castings.

Prerequisite(s): DLT 101 or concurrent enrollment.
Corequisite(s): DLT 203LB.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DLT 203LB Fixed Bridgework Lab
3 cr. hrs. 9 periods (9 lab)
This is the Lab portion of DLT 203.
Corequisite(s): DLT 203.
Offered: May not be offered this year, check class schedule.

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 101/101LB, 104/104LB, 108, 201/201LB, 202, 203/203LB.
Corequisite(s): DLT 204LB.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DLT 204LB Dental Laboratory II Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of DLT 204.
Corequisite(s): DLT 204.
Offered: May not be offered this year, check class schedule.

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 101/101LB, 104/104LB, 108, 202, 203/203LB.
Corequisite(s): DLT 206LB.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.
DLT 206LB Dental Ceramics Lab
2 cr. hrs. 6 periods (6 lab)
This is the Lab portion of DLT 206.
Corequisites: DLT 206.
Offered: May not be offered this year, check class schedule.

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.
Prerequisites: DLT 101/101LB, 104/104LB, 108, 202, 203/203LB.
Corequisites: DLT 207LB.
Information: Consent of program director is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DLT 207LB Advanced Dental Laboratory Technology Lab
3 cr. hrs. 9 periods (9 lab)
This is the Lab portion of DLT 207.
Corequisites: DLT 207.
Offered: May not be offered this year, check class schedule.

Digital Arts
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

DAR 051 Basic Macintosh for Computer Graphics
1 cr. hrs. 2 periods (2 lab)
Introduction to the Macintosh computer environment. Includes operating system, techniques, document files, hardware, and document storage.
Offered: Fall, Spring.

DAR 100 Fundamentals of Rendering
4 cr. hrs. 5 periods (3 lec., 2 lab)
Basic principles and methods of drawing as applied to digital and graphic design. Includes perspective, light sources, form, and textures.
Offered: Fall.

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 the proportion, form, contrast, and texture in the drawing of wood, food, paper, glass, metallic, landscape, and cloth items.
Recommendation: Completion of DAR 100 before enrolling in this course.
Offered: Fall.

DAR 103 Introduction to Digital Arts
3 cr. hrs. 3 periods (3 lec.)
Theory, history, and practice of digital image manipulation. Includes digitally based technologies, analog to digital conversion, data compression, data security, synchronization of digital materials, standards and intellectual property, civil liberties in the digital age, and digital image sound distribution and exhibition.
Offered: Fall, Spring, Summer.

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.
Prerequisites: DAR 103.
Offered: Fall, Spring, Summer.

DAR 112 Graphic Design I
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.
Offered: Fall, Spring, Summer.
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, digital video and audio formats, techniques & theory of editing, aspect ratios, organization of the edit, desktop environment, importing digital elements, project organization, video and audio files, non-linear editing skills, applying transitions, designing titles, applying filters, digital and time line effects, importing graphics, mixing audio and video elements, synchronize sound with video, and exporting digital video projects.
Prerequisite(s): DAR 103 or concurrent enrollment.
Offered: Fall, Spring, Summer.

DAR 120 Applied Computer Graphics
4 cr. hrs. 5 periods (3 lec., 2 lab)
Introduction to current computer graphics software. Includes current software, desktop publishing documents, postscript illustration documents, painting or photo editing documents, file creation using computer software applications, computer graphics hardware, and professional environment.
Offered: Fall, Spring, Summer.

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 051 or 120.
Offered: Fall, Spring, Summer.

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 visual storytelling, story structure, directors, cinematographers, and how screenwriters work. Also includes writing scenes, finishing stories, and writing for television.
Prerequisite(s): DAR 103.
Information: Concurrent enrollment may be approved with instructor or department chair recommendation.
Offered: Fall, Spring.

DAR 125 Digital Video Production I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Principles and techniques of video production. Includes history of digital video, digital video camera and computer equipment, digital camera lenses, exposure, light, color, temperature, composition, portfolio preparation, and career options. Also includes practical experience as part of a digital video production team.
Prerequisite(s): DAR 115 and 124.
Offered: Fall, Spring.

DAR 127 Sound Production for Radio
3 cr. hrs. 4 periods (2 lec., 2 lab)
Methods and techniques of the operation of radio broadcasting equipment. Includes the tools for sound production for radio, the console, turntables and compact disc (CD) players, tape recording and playback units, microphones and sound techniques, applications, drama and dramatic elements, and commercial production. Also includes radio production news and public affairs programs; remote, sports, and advanced production; computer applications in radio; and production in modern format.
Prerequisite(s): DAR 103, 124.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: May not be offered this year, check class schedule.

DAR 128 Digital Photography I
4 cr. hrs. 6 periods (2 lec., 4 lab)
Introduction to digital photography as an art form with an emphasis on fundamental techniques of the digital camera and the digital darkroom. Includes digital cameras with manual functions, digital darkroom, digital printing, studio lighting, image composition, portfolio development, and critical analysis. Also includes the use of state-of-the-art professional quality computers and image processing software, professional digital cameras and printers, and a lighting studio with professional lighting equipment.
Recommendation: Completion of DAR 051 or experience in computer skills before enrolling in this course.
Information: Same as ART 128.
Information: Students are strongly recommended to own or have access to a digital camera with manual exposure control and access to a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. There may be additional supply costs in addition to course fees.
Offered: May not be offered this year, check class schedule.
DAR 140 Digital Arts Illustration Studio: Illustration Technique and 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.
Offered: Fall, Spring.

DAR 145 Digital Arts Illustration Studio: Character Development for Animation and 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 140.
Offered: Fall, Spring.

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.
Offered: Fall.

DAR 173 History of American Cinema
3 cr. hrs. 3 periods (3 lec.)
American cinematic film making as an art form, economic force, and system of representation and communication. Includes history of American cinema, development of the significant films and directors, film studios, and image, cinema genres, history of narrative film and film sounds, alternative American films, analysis and criticism, and American cinema team.
Offered: Fall, Spring, Summer.

DAR 174 Business of Audio
3 cr. hrs. 4 periods (2 lec., 2 lab)
Economic, legal, and financial aspects of the music and recording industry. Includes recording artist contracts; foreign record deals; copyright in sound recordings; independent record producers; record clubs and premiums; labor agreements; music videos; record covers, label, and liner notes; and agents and managers. Also includes licensing of recordings for motion pictures; counterfeiting, piracy, and bootlegging; trade practice regulation; copyright in the United States; songwriter contracts; copyright infringement; and music and the movies.
Prerequisite(s): DAR 103, 124.
Offered: Fall, Spring.

DAR 175 Cinematography
3 cr. hrs. 4 periods (2 lec., 2 lab)
Basic techniques of motion picture production. Includes operation and application of all basic film tools, equipment, and techniques used in cinema production. Also includes practical experience as part of the production team, pre-production, light and image, analysis of film technique, and post-production.
Prerequisite(s): DAR 103, 115, 124.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Fall, Spring.

DAR 176 Film Animation
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to film animation techniques. Includes the history of art animation, procedures in animated films, tools of animation, producing drawings, movements, realistic touches, technical information, and exaggerated action. Also includes the animal kingdom, dialogue, animated effects, and new technologies.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Fall.
DAR 177 Location Sound for Film and Video  
4 cr. hrs. 5 periods (3 lec., 2 lab)  
Theory and practice of sound recording on location for feature films, documentaries, video productions, and multimedia. Includes technical planning and sound design, miking speech, single camera applications, wireless microphones, combinations of microphones, stereo mixing on location, music in film and television, taping off the telephone, and tape presentation. Also includes electronic new gathering and field production, motion picture sound recording, digital audio tape versus analog recording devices, and techniques and aesthetic considerations.  
Prerequisite(s): DAR 103, 124.  
Information: This course will require additional expenses for supplies in addition to course and lab fees.  
Offered: Fall.  

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.  
Offered: Fall, Spring, Summer.  

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 124, 125 or 175.  
Information: This course will require additional expenses for supplies in addition to course and lab fees.  
Offered: Spring.  

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 ad design, billboard design, logo design, poster design, brochure design, package design, and other mediums.  
Prerequisite(s): DAR 112.  
Offered: Fall, Spring, Summer.  

DAR 211 Digital Arts Design Studio: Product Design  
4 cr. hrs. 5 periods (3 lec., 2 lab)  
Principles and techniques applied to product design. Includes package design, card design, textile design, CD design, DVD design, game design, display design, and sign design.  
Prerequisite(s): DAR 112.  
Offered: Fall, Spring, Summer.  

DAR 212 Digital Arts Design Studio: Package Design  
4 cr. hrs. 5 periods (3 lec., 2 lab)  
Procedures and techniques for creating wrapper and container comprehensives. Includes layout, packaging, construction techniques, mock-ups, and the professional environment.  
Prerequisite(s): DAR 112.  
Offered: Fall, Spring, Summer.  

DAR 214 Digital Arts Business and Portfolio  
2 cr. hrs. 3 periods (1 lec., 2 lab)  
Business techniques for the digital arts industry. Includes designer/client relationship, fee structures for designer services, documenting time, portfolio development, and advertising and promotion.  
Prerequisite(s): DAR 103.  
Information: Same as GAM 214.  
Offered: May not be offered this year, check class schedule.  

DAR 215 Advanced Cinematography  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Tools, techniques, and procedures involved in professional film production. Includes pre-planning a 16mm motion picture production, script breakdown, pre-production and post-production, budgeting, distribution, promotion, and developing a prospectus.  
Prerequisite(s): DAR 175.  
Information: This course will require additional expenses for supplies in addition to course and lab fees.  
Offered: Fall.
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.
Prequisite(s): DAR 215.
Offered: Spring.

DAR 218 Introduction to Film Music
3 cr. hrs. 3 periods (3 lec.)
Fundamental techniques applied to film music in motion pictures, television, video, and the new media. Includes the history of film music, the director and the producer, editing, the script, role models and temp tracks, spotting the film, budgets and schedules, developing the concept, timings and the cue sheet, composing, and recording. Also includes dubbing the final mix, electronic and contemporary scoring, scoring for different styles and genres, use of song in film, specialized themes, and the business of film scoring.
Prequisite(s): DAR 103, 124.
Information: Prerequisites may be waived with experience in computer graphics. See a Digital Arts faculty member for information.
Offered: Fall, Spring.

DAR 220 DeskTop Publishing for Digital Arts: QuarkXpress
4 cr. hrs. 5 periods (3 lec., 2 lab)
Design and creation of publication on a personal computer system. Includes current QuarkXpress software, documents, hardware, and professional environment.
Prequisite(s): DAR 051 or 120.
Information: Prerequisites may be waived with experience in computer graphics. See a Digital Arts faculty member for information.
Offered: May not be offered this year, check class schedule.

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.
Prequisite(s): DAR 051 or 120.
Information: Prerequisites may be waived with experience in computer graphics. See a Digital Arts faculty member for information.
Offered: Fall, Spring, Summer.

DAR 222 Advanced Photo Image Editing: Adobe Photoshop
4 cr. hrs. 5 periods (3 lec., 2 lab)
Continuation of DAR 221. Includes advanced techniques using current Adobe Photoshop software, hardware, documents, and professional environment.
Prequisite(s): DAR 221.
Offered: Fall, Spring.

DAR 223 Digital Drawing and Painting
4 cr. hrs. 5 periods (3 lec., 2 lab)
Design and illustration on a personal computer system using current paint software. Includes color, drawing and painting tools, editing and text tools, brush customizing, special effects, and applications.
Prequisite(s): DAR 101.
Offered: Spring.

DAR 224 Advanced Screenwriting
3 cr. hrs. 3 periods (3 lec.)
In-depth examination of writing in visual mediums. Includes history of screen writing, development of the screenplay, genre, development of the pitch and story premise, character development, screenplay formats, and drafting a screenplay and premises.
Prequisite(s): DAR 103, 124.
Information: Prerequisites may be waived with experience in computer graphics. See a Digital Arts Arts faculty member for information.
Offered: Spring.
DAR 225 Digital Video Production II
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of DAR 125. Production of digital video projects. Includes professional digital video production, digital formats and scripting, production plan, utilization of digital camera and lighting equipment in remote and on-location sites, post-production, linear and non-linear editing equipment and approaches, editing and the visual storyline, and building a portfolio.
Prerequisite(s): DAR 125.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Spring.

DAR 226 DeskTop Publishing for Digital Arts: Adobe InDesign
4 cr. hrs. 5 periods (3 lec., 2 lab)
Design and creation of publications on a personal computer system. Includes current Adobe InDesign software documents, computer graphics hardware, and professional environment.
Prerequisite(s): DAR 051 or 120.
Information: Prerequisites may be waived with experience in computer graphics. See a Digital Arts faculty member for information.
Offered: Fall, Spring.

DAR 228 Advanced Desktop Graphics: Adobe Illustrator
4 cr. hrs. 5 periods (3 lec., 2 lab)
Advanced computer generated vector graphics and illustrations. Includes current Adobe Illustrator software, computer graphics hardware, design, vector graphic documents, and professional environment.
Prerequisite(s): DAR 122.
Offered: Fall.

DAR 230 Production Techniques for Print
4 cr. hrs. 5 periods (3 lec., 2 lab)
Preparation of artwork for printing. Includes crop marks, typesetting to specifications, typesetting to match a layout line breaks/spelling, spot colors, duotones, bleeds/reversed type, two sided documents, dummy documents, line art/photos, output, newspaper and magazine ads, logo specifications, paper stock, outline photos, CMYK process colors, multiple page booklets, trapping, and professional work environment.
Prerequisite(s): DAR 122, 220 or 226, and 221 or concurrent enrollment.
Offered: Fall.

DAR 232 Digital Photography II
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of DAR/ART 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 cameras and image processing software, professional digital cameras, printers, and a lighting studio with professional lighting equipment.
Prerequisite(s): DAR/ART 128.
Recommendation: Completion of DAR 221 before enrolling in this course.
Information: Same as ART 232.
Information: Students must own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. Information: There may be additional supply costs in addition to course fees.
Information: The prerequisite(s) may be waived for basic skills in digital photography. See a DAR/ART digital photography instructor for prerequisite information.
Offered: Fall.

DAR 233 Digital Photography III
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of DAR/ART 232. Includes digital capture and image acquisition, advanced digital darkroom and digital output, advanced image composition, advanced multiple images integration, advanced portfolio development, and advanced critical analysis. Also includes the advanced use of state-of-the-art professional quality computers and image processing software, professional digital cameras, scanners, printers, and projectors.
Prerequisite(s): DAR 221 and DAR/ART 232.
Information: Same as ART 233.
Information: Students must own or have access to a digital camera with manual exposure control and a computer with image processing software. Professional quality cameras, printers, lighting equipment and studio will be provided for specific assignments. Information: There may be additional supply costs in addition to course fees.
Information: The prerequisite(s) may be waived for basic skills in digital photography. See the ART/DAR instructor for prerequisite information.
Offered: Spring.
DAR 235 Advanced Design and Production Applications
4 cr. hrs. 5 periods (3 lec., 2 lab)
Design principles and production techniques as applied to the graphics industry. Includes complex designs with focal points, unity, texture, space relationships, color harmonies, psychology of color, bleed preparation, multiple page documents, paper stock, die cuts in complex designs, and special finishes.

Prerequisite(s): DAR 112 and 230.
Offered: Spring.

DAR 236 Advanced Desktop Publishing
4 cr. hrs. 5 periods (3 lec., 2 lab)
Advanced design and creation of publications using current QuarkXpress and InDesign software. Includes advanced applications in preferences, complex documents, advanced layers, libraries, advanced typography, automating/synchronizing text, advanced style sheet applications, books, tables, WEB and interactive features, and Portable Document Format (PDF).

Prerequisite(s): DAR 220 and 226.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring.

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.
Offered: Spring.

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.

Prerequisite(s): DAR 221 or 223.
Information: Prerequisite(s) may be waived with experience in computer graphics. See a Digital Arts faculty member for information.
Offered: Fall, Spring.

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.

Prerequisite(s): DAR 221 or 250.
Offered: Fall.

DAR 252 Digital Multimedia Design I: Flash
4 cr. hrs. 5 periods (3 lec., 2 lab)
Digital Multimedia Design I: Flash Basics of multimedia design using Adobe Flash. Includes using current multimedia authoring software, graphics, text, animation, sound, authoring, and publishing methods.

Prerequisite(s): DAR 051 or 120.
Information: Experience in computer graphics may be substituted for some prerequisites. See a Digital Arts faculty member for information.
Offered: Fall, Spring, Summer.
DAR 254 Digital Multimedia Design II: Advanced Flash
4 cr. hrs. 5 periods (3 lec., 2 lab)
Advanced techniques in Adobe Flash and other multimedia software. Includes multimedia formats and components, creation process, production process, interactivity, Flash components and data binding, business and legal considerations, and marketing and distribution. Also includes embedding sound, graphics, and video into Flash; building interactions within timelines and ActionScripts; and integrating Flash content with web pages.
Prerequisite(s): DAR 252.
Offered: Fall.

DAR 255 Television Commercial Design
4 cr. hrs. 5 periods (3 lec., 2 lab)
Designing television commercials. Includes a basic overview of videography, production procedures, conceptualizing, storyboarding, budgeting, casting, videotaping, editing, music, special effects, and legal considerations.
Prerequisite(s): DAR 225.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.

DAR 256 Web Design: Dreamweaver
4 cr. hrs. 5 periods (3 lec., 2 lab)
Design and production of web pages using Adobe Dreamweaver. Includes introduction to the World Wide Web, Dreamweaver software, Hypertext Mark-Up Language (HTML), home pages, links, uploading, multimedia, Cascading Style Sheets (CSS), and Web Site management.
Prerequisite(s): DAR 122, 221.
Offered: Fall, Spring.

DAR 257 Advanced Web Design
4 cr. hrs. 5 periods (3 lec., 2 lab)
Advanced design and production of web pages and sites. Includes planning and management, user interfaces, design, web site design with various multimedia elements, careers in World Wide Web, and interactive integration of forms and databases. Also includes advanced features of Adobe Dreamweaver and integration with Adobe Illustrator, Photoshop, Fireworks, and Flash.
Prerequisite(s): DAR 221, 256.
Offered: Fall.

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.
Offered: Spring.

DAR 261 Adobe Illustrator Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Computer generated text and graphics for illustration. Includes Macintosh environment, scanning, illustration software, and techniques and procedures.
Information: Basic Macintosh skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 262 QuarkXpress Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Computer generated text and graphics for publication. Includes DeskTop environment, QuarkXpress software, and creating and printing a document.
Information: Basic Macintosh skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 263 Adobe Photoshop Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Digital photograph manipulation in Adobe Photoshop. Includes digital photographs, placing photographs, tools and palette, color manipulation, and output.
Information: Basic Macintosh skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 264 Adobe Seminar
1 cr. hrs. 1 periods (1 lec.)
Computer generated graphics and text for illustration. Includes the Adobe environment, scanning an image, illustration software, creating a document, printing an illustration, and professional environment.
Information: Basic computer skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.
DAR 265 Beginning Web Design Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Information: Basic Macintosh and computer graphics experience required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 266 Interactive Design Seminar
1 cr. hrs. 1 periods (1 lec.)
Design of interactive computer presentations for training, selling, information, and entertaining. Includes creating original art, presentations, interactivity, and importing and outputting.
Information: Basic computer skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 268 Adobe After Effects Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Composite of animations, photos, and videos into presentations. Includes keyframe animation, composing files for production, special effects, and outputting to video and computer formats.
Information: Basic Macintosh skill required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 269 Advanced Web Design Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Continuation of DAR 265. Includes user interface, review of Extensible Hypertext Markup Language (XHTML), Dynamic XHTML, and Extensible Markup Language (XML) for graphics and web design.
Prerequisite(s): DAR 265.
Information: Web design experience required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 270 Adobe Photoshop Tips MAC
1 cr. hrs. 1 periods (1 lec.)
Computer retouching and manipulation of photos and illustrations. Includes current Adobe Photoshop software, effects, hardware, and professional environment.
Information: Experience with Adobe Photoshop required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 271 DeskTop Prepress Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Integration of QuarkXpress, Illustrator, and PhotoShop in preparing computer generated art for outputting to film and print. Includes trapping, color, file formats outputting, and prepress considerations.
Prerequisite(s): DAR 122 or 261, 220 or 262, 221 or 263.
Information: Experience using QuarkXpress, Illustrator, and Photoshop is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

DAR 272 Advanced Adobe Photoshop Seminar on the Macintosh
1 cr. hrs. 1 periods (1 lec.)
Computer generated graphics and illustration. Includes current Adobe Photoshop software, computer graphics hardware, and documents.
Prerequisite(s): DAR 221 or 263.
Information: Experience with Adobe Photoshop is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

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.
Prerequisite(s): DAR 124.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Fall, Spring.
DAR 276 Advanced Audio Production
4 cr. hrs. 6 periods (2 lec., 4 lab)
Production of audio for film, television, radio, and the recording industry. Includes the theoretical foundation of sound, field production recording, techniques involved in audio for video tape and film, and mixing boards and outboard devices. Also includes digital techniques and workstations, systems using both digital and analog devices, and current thought on recording techniques.

Prerequisite(s): DAR 275.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Spring.

DAR 277 Film/Video Production Financing
3 cr. hrs. 3 periods (3 lec.)
Strategies to secure production financing for independent film/video projects. Includes fundable projects; research; proposal formats; granting, funding, and special program sources; and developing the project narrative. Also includes budgeting, distribution, promotion, and developing a complete prospectus for funding a media project.

Prerequisite(s): DAR 124.
Offered: Spring.

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.

Prerequisite(s): DAR 103.
Information: This course will require additional expenses for supplies in addition to course and lab fees.
Offered: Spring.

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, fee structures, documenting time, current digital arts tools and processes, interviews, and presentation of portfolios.

Prerequisite(s): DAR 111, 112, 122, 221, 226.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

DAR 296 Digital Arts Independent Projects
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.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring, Summer.

DAR 29611 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.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring, Summer.
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.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: Fall, Spring, Summer.

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.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: Fall, Spring, Summer.

DAR 296I4 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.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: Fall, Spring, Summer.

DAR 296I8 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.  
Information: Completion of twelve credit hours of DAR courses, DAR 196, and consent of instructor are required before enrolling in this course.  
Offered: Fall, Spring, Summer.

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.  
Offered: May not be offered this year, check class schedule.

Direct Care Professional

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

DCP 101 Direct Care Professional: Principles of Care Giving  
2.25 cr. hrs. 2.25 periods (2.25 lec.)  
Addresses principles and application of care giving and personal care in the various home and community based settings. Includes examination of legal and ethical issues, communication, activities, nutrition and food preparation, housekeeping, infection control, safety, and time and stress management for the Direct Care Professional (DCP).  
Offered: Fall, Spring.

DCP 102 Direct Care Professional: Aging/Physical Disabilities  
2 cr. hrs. 2 periods (2 lec.)  
Presents principles and applications of provision of care in the home environment for older adults and persons with disabilities. Addresses overview of services and continuum of care; aspects of independent living; and roles and responsibilities of Direct Care Professionals (DCPs). Also includes legal and ethical issues, vulnerable adult abuse, reporting requirements, care plans, biological aspects of aging, physical disabilities and chronic conditions, psychological and cognitive conditions and implications for DCPs. An overview of dementia-specific care is incorporated.  
Prerequisite(s): DCP 101.  
Offered: Fall, Spring.

DCP 103 Direct Care Professional: Alzheimer’s/Forms of Dementia  
2 cr. hrs. 2 periods (2 lec.)  
Presents principles and applications of provision of care in the home environment for persons with Alzheimer and related forms of dementia. Addresses an overview of services and continuum of care; aspects of independent living; and roles and responsibilities of Direct Care Professionals (DCPs). Also includes legal and ethical issues, vulnerable adult abuse, reporting requirements, and care plans. Emphasis on aspects of Alzheimer’s as related to physical disabilities and chronic conditions, psychological and cognitive conditions and implications for DCPs.  
Prerequisite(s): DCP 101.  
Offered: Fall, Spring.
DCP 104 Direct Care Professional: Developmental Disabilities
2 cr. hrs. 2 periods (2 lec.)
Addresses a foundational knowledge for the provision and application of quality care for people with developmental disabilities by Direct Care Professionals (DCPs) or family caregivers. Includes the examination and application of philosophical, social, medical, physical, legal, and ethical issues faced by people with disabilities.
Prerequisite(s): DCP 101.
Offered: Fall, Spring.

DCP 190 Direct Care Professional Internship
2 cr. hrs. 10 periods (10 lab)
Provides students with hands-on experiences at a direct care agency. Includes an orientation to working in a direct care agency; working with a developmentally/physically disabled population and the aging; professionalism in the direct care profession, and application of the principles of care giving through hands-on experience in the field. Also includes program administration; management, supervision and other oversight positions; office practices and computer applications for direct care; and funding sources for human service agencies and organizations.
Prerequisite(s): DCP 101, 102, and either 103 or 104.
Information: Included in the 160 internship hours are 24 hours of classroom instruction; 1 credit hour is equal to 80 hours of contact time.
Information: Course is optional for program.
Offered: May not be offered this year, check class schedule.

Early Childhood Education
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ECE 107 Human Development and Relations
3 cr. hrs. 3 periods (3 lec.)
Analysis of the elements that affect growth and development throughout the 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.
Offered: Fall, Spring, Summer.

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, developing a professional portfolio, use of appropriate materials, alignment with national social studies standards, presentation techniques, and developmentally appropriate practices.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Spring.

ECE 110 Communication and Language: Early Literacy for Children
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.
Information: This course replaces CDA 141 and 225.
Information: ECE 110A and 110B together constitute ECE 110.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall.

ECE 110A Communication and Language: Early Literacy for Children A
1 cr. hrs. 1 periods (1 lec.)
Module A study of oral and written language acquisition and emergent literacy. Includes the developmental theories of language and emergent literacy acquisition, the methods of language integration of literacy development across the curriculum, and how families and the community are and should be involved in children's literacy development.
Information: ECE 110A and 110B together replace CDA 141 and 225.
Information: ECE 110A and 110B together constitute ECE 110.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall, Spring.
ECE 110B Communication and Language: Early Literacy for Children B
2 cr. hrs. 2 periods (2 lec.)
Module B study of oral and written language acquisition and emergent literacy. Includes examination of emergent literacy acquisition and the developmental theories of language, development of language-rich environments that include second language acquisition, developmentally appropriate children's literature, and involving families and community in children's literacy development.

Information: ECE 110A and 110B together replace CDA 141 and 225.
Information: ECE 110A and 110B together constitute ECE 110.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall, Spring.

ECE 112 Music and Art for Children
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, creating the appropriate environment, integration with other subject areas, and role of the teacher.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Information: ECE 112A and ECE 112B together constitute ECE 112.
Offered: Fall, Spring.

ECE 112A Music and Art for Children: Module A
1 cr. hrs. 1 periods (1 lec.)
Survey of music and art for children. Includes selection of a variety of musical works from various cultures and artists, creation of a developmentally appropriate environment, integration of music activities into other curriculum areas, and examination of the role of the teacher in early education music programs.

Information: This course replaces CDA 201.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Information: ECE 112A and 112B together constitute ECE 112.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall, Spring.

ECE 112B Music and Art for Children: Module B
2 cr. hrs. 2 periods (2 lec.)
Survey of art and creative media for children. Includes selecting a variety of art and creative media from various cultures, the relation of the developing creativity of children to the whole child, the importance of the integration of art and creative media activities into various curricula areas, and the role of the teacher in creating a developmentally appropriate environment for young children.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Information: Requires a subscription to TaskStream electronic portfolio. Additional fees apply.
Information: ECE 112A and 112B together constitute ECE 112.
Offered: Fall, Spring.

ECE 114 Effective Parenthood
3 cr. hrs. 3 periods (3 lec.)
Identification and discussion of determinants of positive child rearing practices. Includes genetic factors, parental factors, healthy and safe environments, parental practices, communication, guidance, problem-solving, discipline techniques, challenges of parenting, and community resources.

Prerequisite(s): ECE 117.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Spring.

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): MAT 082.

Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall.

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: A subscription to Task Stream is required for successful completion of this course.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall, Spring, Summer.
**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):* MAT 082.

*Information:* This course replaces CDA 142, 143, and 152.
*Information:* ECE 124A and 124B together constitute ECE 124.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

Offered: Fall, Summer.

**ECE 124A Math and Science for Children: Module A**
2 cr. hrs. 2 periods (2 lec.)
Module A study of theories, methods, and techniques for teaching math and problem solving. Includes central concepts in math and problem solving, communication skills, assessment, integration into other subject areas, teaching methods, and developmentally appropriate practices.

*Prerequisite(s):* MAT 082.

*Information:* This course replaces CDA 142 and CDA 152.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.
*Information:* ECE 124A and 124B together constitute ECE 124.

Offered: Fall, Spring.

**ECE 124B Math and Science for Children: Module B**
1 cr. hrs. 1 periods (1 lec.)
Module B study of theories, methods, and techniques for teaching science. Includes central concepts in science, communication skills, assessment, and integration into other subject areas, teaching methods, and developmentally appropriate practices.

*Information:* This course replaces CDA 143.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.
*Information:* ECE 124A and 124B together constitute ECE 124.

Offered: Fall, Spring.

**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.

*Information:* This course replaces CDA 104, 119, and 151.
*Information:* ECE 125A, 125B, and 125C together constitute ECE 125.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

Offered: Fall.

**ECE 125A Nutrition, Health, and Safety for the Young Child: Module A**
1 cr. hrs. 1 periods (1 lec.)
In-depth study of the safety needs of children. Includes children's needs, caregiver responsibilities, illness prevention, record keeping, promotion of safety, safe environments, and community resources.

*Information:* This course replaces CDA 104.
*Information:* ECE 125A, 125B, and 125C together constitute ECE 125.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

Offered: Fall.

**ECE 125B Nutrition, Health, and Safety for the Young Child: Module B**
1 cr. hrs. 1 periods (1 lec.)
In-depth study of the health needs of children. Includes children's needs, caregiver responsibilities, promoting healthy attitudes, illness prevention, record keeping, promotion of healthy environments, and community resources.

*Information:* This course replaces CDA 119.
*Information:* ECE 125A, 125B, and 125C together constitute ECE 125.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

Offered: Fall.

**ECE 125C Nutrition, Health, and Safety for the Young Child: Module C**
1 cr. hrs. 1 periods (1 lec.)
In-depth study of the nutritional needs of children. Includes children's nutritional needs, caregiver responsibilities, food allergies, promoting healthy attitudes, and community resources.

*Information:* This course replaces CDA 151.
*Information:* ECE 125A, 125B, and 125C together constitute ECE 125.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

Offered: Fall, Spring.
**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 sensory motor development, development of coordination, object permanence, trial and error interactions, developmentally appropriate practice, guidance strategies, toilet training, physical settings, and observations and record keeping.

*Information:* This course replaces CDA 129, 227, 228, and 235.
*Information:* ECE 129A and 129B together constitute ECE 129.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Fall.

**ECE 129A Infant and Toddler Education: Module A**
2 cr. hrs. 2 periods (2 lec.)
Module A examination of effective teaching and guidance practices during infant and toddler years. Includes developmentally appropriate practice, guidance strategies, toilet training, physical settings, and observations and record keeping.

*Information:* This course replaces CDA 228 and 235.
*Information:* ECE 129A and 129B together constitute ECE 129.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Spring.

**ECE 129B Infant and Toddler Education: Module B**
1 cr. hrs. 1 periods (1 lec.)
Module B examination of effective teaching and guidance practices during infant and toddler years. Includes sensory motor development, development of coordination, object permanence, trial and error interactions, developmentally appropriate practice, and the physical settings.

*Information:* This course replaces CDA 129 and 227.
*Information:* ECE 129A and 129B together constitute ECE 129.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Spring.

**ECE 190 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 112, 117, 200 (or CDA 102, 121, and 271), 226, 228, and 240.
*Information:* A 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 and TB test are required.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.
*Information:* Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. 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).

*Offered:* Fall, Spring and Summer.

**ECE 200 Foundations of Early Childhood Education**
3 cr. hrs. 3 periods (3 lec.)
Includes a survey of the historical and philosophical foundations of Early Childhood Education. Also includes historical and contemporary influences, pedagogy, agency management of early childhood programs, early childhood assessment, and professional responsibilities.

*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Fall.

**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 implication and service delivery, public policy, identification and assessment, specific areas of exceptionality, service plans, support systems for families, national, state and local responsibilities, early intervention, and observational records. Also includes field experience.

*Prerequisite(s):* ECE 117.
*Information:* This course replaced ECE 111. Either ECE 111 or ECE 211 will meet the graduation requirement.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Spring.

**ECE 226 Teaching Techniques and Behavior Management**
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, professional development, and self-evaluation.

*Information:* Includes a 22-hour practicum.
*Information:* Students must have college-level reading and writing skills to be successful in ECE courses.

*Offered:* Fall, Spring.
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.
Information: A subscription to Task Stream is required for successful completion of this course. Additional fees apply.
Information: This course replaced ECE 128. Either ECE 128 or ECE 228 will meet the graduation requirement.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall, Spring, Summer.

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.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Information: A subscription to Task Stream is required for successful completion of this course. Additional fees apply.
Offered: Fall, Spring, Summer.

ECE 260 Foundations and Variations in Early Child Development
3 cr. hrs. 3 periods (3 lec.)
Typical and atypical child growth and development, birth through grade 3. Includes theoretical framework; brain development and effects of experience on brain development; prenatal, perinatal, and postnatal causes of disability; variations in development; healthy development; and intervention.
Prerequisite(s): ECE 117.
Recommendation: Completion of ECE 211 before enrolling in this course.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall.

ECE 262 Early Childhood Special Needs Assessment Practices
3 cr. hrs. 3 periods (3 lec.)
Examine various formal and informal assessment practices for children birth through age 8 who have or are at risk for special needs. Includes legal provisions governing assessment and service eligibility; common disabilities, delays and disorders; use, limitations, and procedural considerations of assessment; the role of family; formal and informal cognitive, skill, and behavior based tests; terms and scoring systems frequently utilized in assessments reports and measurements; use of screening tools and assessments; and intervention methods and models.
Prerequisite(s): ECE 117.
Recommendation: Completion of ECE 211 before enrolling in this course.
Information: Students will be expected to complete 6 hours of fieldwork in inclusive classrooms.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Fall.

ECE 264 Families and Professional Partnerships in ECSE
3 cr. hrs. 3 periods (3 lec.)
Examine the importance of developing relationships between families of children birth through age 8 with special needs and the professionals who work with them. Includes theoretical and cultural influences; variables that impact family functioning and emotions; family-centered services; relationship-based practice; intervention teams and service locations; intervention plan requirements; and professional characteristics and responsibilities.
Prerequisite(s): ECE 117.
Recommendation: Completion of ECE 211 before enrolling in this course.
Information: Students will be expected to complete 10 hours of observation in inclusive classrooms.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Spring.

ECE 266 Curriculum Adaptation in the Inclusive Early Childhood Class
3 cr. hrs. 3 periods (3 lec.)
Strategies to address the cognitive, communication, motor, personal-social and adaptive needs of children birth through age 8 with developmental delays or disabilities. Includes normal and exceptional development; legal, ethical, and functional roles of educators and service providers; partnerships with families; recognizing special needs that require adapted instruction; individual intervention plans; developing and coordinating services; designing and implementing curriculum modifications and instructional strategies in the inclusive classroom; promoting the development of social and emotional skills, motor skills, communication skills, and cognitive skills; and adaptive self-help and independence skills.
Prerequisite(s): ECE 117.
Recommendation: Completion of ECE 211 before enrolling in this course.
Information: Students will be expected to complete 15 hours of observation in inclusive classrooms.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: Spring.
ECE 268 Strategies to Support Development in Inclusive Environments
4 cr. hrs. 16 periods (1 lec., 15 lab)
Identifying and adapting instructional strategies to provide optimal support to individual children through age 8. Includes Developmentally Appropriate Practices (DAP) and Early Childhood Special Education (ECSE) best practices as a blended process; developing and nurturing the family-professional partnership; the role of assessments and progress monitoring for individualizing instructional strategies; designing, implementing, and assessing strategies for adaptive, language and communication, motor, cognitive, social, and emotional development; designing individual educational objectives for children who have needs in one or more domains of the Individuals with Disabilities Education Act; and analyzing one's professional development.

Prerequisite(s): ECE 117, 260, 262, 264, 266.
Recommendation: Completion of ECE 211 before enrolling in this course.
Information: Consent of instructor or program coordinator is required before enrolling in this course.
Information: A child development course may be used to substitute for ECE 117.
Information: Students will be expected to complete 120 hours of documented field work in an early childhood special education inclusive setting.
Information: Students must have college-level reading and writing skills to be successful in ECE courses.
Offered: May not be offered this year, check class schedule.

Economics

ECN 200 Basic Economic Principles
3 cr. hrs. 3 periods (3 lec.)
Examination of microeconomic and macroeconomic theory with economic decision making, economic systems, production possibilities model, and market analysis. Includes micro topics, such as consumer demand, producer supply, and overall price determination. Also includes macro topics, such as goals and problems of the macroeconomy, fiscal policy, budgets, the Federal Reserve, and monetary policy.

Prerequisite(s): MAT 092.
Information: Not open to students who have taken or are taking ECN 201 and/or ECN 202.
Offered: Fall, Spring, Summer.

ECN 201 Microeconomic Principles SUN# ECN 2202
3 cr. hrs. 3 periods (3 lec.)
Economic theory as applied to individual decision-making units. Includes economic decision making, economic systems, production possibilities model, and market analysis. Also includes details of consumer demand with elasticity and utility maximization, producer supply with market structures and profit maximization, and overall price determination.

Prerequisite(s): MAT 092.
Offered: Fall, Spring, Summer.

ECN 202 Macroeconomic Principles SUN# ECN 2201
3 cr. hrs. 3 periods (3 lec.)
Economic theory as applied to the operation of the economy as a whole. Includes economic decision making, economic systems, production possibilities model, and market analysis. Also includes goals and problems of the macroeconomy, foundations of the macroeconomy, fiscal policy, budgets, money, the role of financial institutions and the Federal Reserve, money creation, monetary theory and policy.

Prerequisite(s): MAT 092.
Offered: Fall, Spring, Summer.

Education

EDU 103 Teaching Students with ADD/ADHD
1 cr. hrs. 1 periods (1 lec.)
Strategies for working with children with attention difficulties. Includes overview Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD), diagnostic procedures, most common treatments, laws pertaining to servicing ADD/ADHD, strategies for the classroom, and overview of resources and organizations.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.
EDU 106 Structured English Immersion Introduction
1 cr. hrs. 1 periods (1 lec.)
Introduction to Structured English Immersion (SEI) methods and evaluation for pre-service or in-service teachers and administrators. Includes an overview of English Language Learning (ELL) and Sheltered Instruction. Also includes curriculum adaptation, student assessment, development of SEI lesson plans, and legal, historical, and educational reasons for Structured English Immersion.
Information: Meets the Arizona Department of Education requirement for provisional SEI endorsement.
Offered: May not be offered this year, check class schedule.

EDU 111 Comprehension Strategies for Struggling Adolescent Readers
1 cr. hrs. 1 periods (1 lec.)
Overview of the issues facing the struggling adolescent reader. Includes strategies and tools for supporting reading skills and comprehension development. Also includes profile and key issues faced by struggling readers, cuing systems used by competent readers, key reading strategies, and development of literacy comprehension.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.

EDU 134 Survival Strategies for the Substitute Teacher
1 cr. hrs. 1 periods (1 lec.)
Techniques to prepare substitute teachers for the tasks they face in elementary, middle school and high school classrooms. Includes classroom management, interpreting and implementing lesson plans, and district procedures and policies.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.

EDU 138 Stress Management for Teachers
1 cr. hrs. 1 periods (1 lec.)
Overview of teacher stress causes, effects, and interventions. Includes theories of stress, recognizing personal stress, stress and brain functioning, work related sources of stress, and a variety of stress management techniques.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.

EDU 177 Motivating Students
.25-1 cr. hrs. .25-1 periods (.25-1 lec.)
Motivating students to learn. Includes theoretical background, motivating factors and strategies, intrinsic and extrinsic theories, classroom factors, behaviors associated with high motivation, affective factors in classroom climate, and practical suggestions for motivating students.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.

EDU 200 Introduction to Education
3 cr. hrs. 3 periods (3 lec.)
Provides students with an initial perspective of Education. Topics include: purposes of schooling and schools; 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, philosophical, legal, and financial issues facing today's schools; history of American education; and current trends in education reform.
Information: This class requires 30 hours of classroom experiential involvement in local schools.
Information: May be taken for Professional Development purposes.
Offered: Fall, Spring.

EDU 201 Diversity in Education
3 cr. hrs. 3 periods (3 lec.)
Examination of diversity: age, class, gender, race disabilities, sexual orientation, and culture effects on the K-12 classroom. Exploration of diversity on education; demographic changes and effects on education; diversity and multicultural philosophies and perspectives and approaches for helping students communicate. Also, analysis of prejudice, single-group studies, multicultural education, human relations and capital. Explores children’s school achievement in light of learning and teaching styles and reconstructionist approach to classroom diversity and curriculum planning.
Information: May be taken for Professional Development purposes.
Offered: Fall.

EDU 202 Introduction to the Exceptional Learner
3 cr. hrs. 3 periods (3 lec.)
Special education foundation topics including current educational practices and related educational theories: Instructional, classroom management and assessment. Cultural consideration within K-12 special education; student transitioning within the school and between school and the community. Also, role and function of the special education teacher preparing for instruction, lesson plans, assessment, instruction, technology, and compliance.
Information: May be taken for Professional Development purposes.
Offered: Fall, Spring.
EDU 206 Relationships in Classroom Settings
3 cr. hrs. 3 periods (3 lec.)
Introduction to basic classroom management principles including the management of curriculum, instruction, physical environment, psychosocial factors, student motivation and special groups. Also included is a focus on disruptive behavior, family involvement, communication, stress management, and appropriate record keeping.
Information: May be taken for Professional Development purposes.
Offered: Spring.

EDU 211 Meeting the Needs of Gifted Students
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Introduction to the methods and strategies required when teaching and working with gifted students. Includes all aspects of identification, and classroom placement, acceleration, independent study, problem-solving, and participation in academic competitions.
Information: May be taken for Professional Development purposes.
Offered: May not be offered this year, check class schedule.

EDU 240 Adolescent Development
3 cr. hrs. 3 periods (3 lec.)
Examination of early to young adult adolescent development; investigation of developmental theories and methods; and comprehensive analysis of problems encountered by today’s youth. Topic focus includes the physical, cognitive, moral and personality development; familial and peer relations, dating and sexuality, psychosocial problems: teen suicide, delinquency, and substance abuse. Also, includes ethnic and cultural considerations in addition to educational and vocational issues.
Information: This class requires a 10-hour practicum. Meets Middle School Endorsement and Coaching Certificate requirements in conjunction with other coursework.
Information: May be taken for Professional Development purposes.
Offered: Fall.

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.
Information: This class requires a 10 hour practicum. Meets Middle School Endorsement requirements in conjunction with other coursework.
Information: May be taken for Professional Development purposes.
Offered: Fall.

EDU 242 Middle School Practicum
3 cr. hrs. 3 periods (3 lec.)
Strategies and tools for middle school teaching; subject matter instruction methods; adolescent development and learning; diversity of learners and instruction; creating a positive learning environment; instruction planning and implementation; assessment; professionalism; and personal reflection.
Information: Education department approval is required before enrolling in this course.
Information: This course requires a 30-hour middle school practicum placement.
Information: Meets Middle School Endorsement requirements in conjunction with other coursework.
Information: May be taken for Professional Development purposes.
Offered: Fall.

EDU 243 ESL Practicum
3 cr. hrs. 3 periods (3 lec.)
Concepts, techniques, and on-site experience working with English Language Learners (ELL). Requires observations of ELL’s in a variety of settings, evaluation of English as a Second Language (ESL) and Sheltered English Instruction, teaching techniques and actual experience in developing lessons and teaching ELL.
Information: Education department approval is required before enrolling in this course.
Information: This class requires a 30-hour ESL K-12 practicum. Meets ESL Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.
Offered: Fall.

EDU 244 Teaching Reading and Writing to ESL Students
3 cr. hrs. 3 periods (3 lec.)
Introduction to teaching reading and writing in English as a Second Language (ESL) setting. Includes teaching techniques, learning strategies and activities, the six traits of writing, including reading and writing across the curriculum.
Information: Education department approval is required before enrolling in this course. This course requires a 10-hour practicum. Meets ESL Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.
Offered: Spring.
EDU 245 Linguistics
3 cr. hrs. 3 periods (3 lec.)
Introduction to the nature, structure, and acquisition of language. Includes basic concepts of phonetics, phonology, morphology, syntax, semantics, psycholinguistics, language variation, and theories of first and second language acquisition.

Information: Education department approval is required before enrolling in this course.
Information: This class requires a 10-hour practicum. Meets ESL Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.
Offered: Spring.

EDU 246 Assessment of ESL Students
3 cr. hrs. 3 periods (3 lec.)
Introduction to the assessment of ESL students: knowledge of assessment, purposes of assessment, identification, placement, and exit standards for students, linking assessment to instruction, and creating classroom assessments.

Information: Education department approval is required before enrolling in this course. This class requires a 10-hour practicum. Meets ESL Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.
Offered: Fall.

EDU 247 Family and Community Involvement in ESL Student Instruction
3 cr. hrs. 3 periods (3 lec.)
Introduction to parental, school and community involvement in the instruction of ESL students. Also, includes research on the value of family/school connections, an overview of effective programs, analysis of practices and resources available and information on how develop a plan of action for a school.

Information: Education department approval is required before enrolling in this course. This course requires a 10-hour practicum. Meets ESL Endorsement requirements in conjunction with other coursework. May be taken for Professional Development purposes.
Offered: Fall.

EDU 252 Reading Diagnosis, Decoding, Remediation and Practicum
3 cr. hrs. 3 periods (3 lec.)
Fundamentals of diagnosis, decoding, and remediation of reading problems. Includes instruction techniques on administering, analyzing, and interpreting informal procedures, and using the results to plan a program of remediation.

Prerequisite(s): EDU 276 and 277.

Information: Education department approval is required before enrolling in this course.
Information: This class requires a 10-hour practicum. May be taken for Professional Development purposes. Does not meet current Arizona Department of Education Reading Endorsement requirement.
Offered: Fall.

EDU 254 Literacy Development in the Primary Grades/Practicum
3 cr. hrs. 3 periods (3 lec.)
Philosophy, information and strategies for literacy development in the primary classrooms. Includes literacy and language development theories, observation and assessment, family literacy, strategies for teaching, and motivation and management.

Information: Education department approval is required before enrolling in this course. This class requires a 10-hour practicum. May be taken for Professional Development purposes. Does not meet current Arizona Department of Education Reading Endorsement requirement.
Offered: Spring.

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: Education department approval is required before enrolling in this course. This class requires a 10-hour practicum. May be taken for Professional Development purposes. Does not meet current Arizona Department of Education Reading Endorsement requirement.
Offered: Fall.

EDU 256 Literacy Development in the Middle School/Practicum
3 cr. hrs. 3 periods (3 lec.)
Research and information strategies related to teaching reading and language arts at the middle school level. Topics include: reading research; reading strategies; work with and support struggling readers; motivation; readers’ workshop; assessment; age-appropriate materials selection; and development and implementation of strategic reading groups.

Information: Education department approval is required before enrolling in this course. This class requires a 10-hour practicum. May be taken for Professional Development purposes. Does not meet current Arizona Department of Education Reading Endorsement requirement.
Offered: Spring.
EDU 257 Special Topics: Children’s Literature and Literacy/Practicum
3 cr. hrs. 3 periods (3 lec.)
Strategies for using children’s literature to support literacy development. Topics include: literature selection criteria, genre, response strategies, literature assessment, elements and styles of literature and poetry, ethnic and gender issues in children’s literature, thematic unit building, response assessment, using children’s literature to teach writing, and benefits of literature and response in the classroom.
Information: Education department approval is required before enrolling in this course. This class requires a 10-hour practicum. May be taken for Professional Development purposes. Does not meet current Arizona Department of Education Reading Endorsement requirement.
Offered: Spring.

EDU 260 Developing Reading, Instruction, Assessment, and Remediation
3 cr. hrs. 3 periods (3 lec.)
Concepts, techniques and skills to teach struggling readers. Includes the components of reading. Includes the application of concepts to conduct assessments, instructional and remedial activities for struggling readers. Includes how to participate in the Individualized Education Program (IEP) process to help develop long-range individualized instructional plans and create short-range goals and objectives considering an individual student’s abilities, needs and learning environment.
Information: Same as EDS 260. Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. This class requires a 15-hour practicum.
Offered: Spring.

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: Admission to the Post-Degree Teacher Certification Program or Education Department approval is required before enrolling in this course.
Offered: Fall.

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: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio.
Offered: Fall.

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 curricular methods employed with each model. Includes social modes of teaching and learning, information processing models, personal models, behavioral models, synthesizing and applying models of teaching, lessons and assessments using various models, teaching as a profession, and methods for increasing instructional effectiveness.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.
Offered: Fall.

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: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio.
Offered: Spring.
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: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: This course requires a 10-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Spring.

EDU 274 Structured English Immersion Foundations
3 cr. hrs. 3 periods (3 lec.)
Overview of Structured English Immersion (SEI) Foundations. Includes concepts designed to meet state standards for teachers of English Language Learners (ELLs). Also includes instruction in SEI strategies, teaching with Arizona English Language Learner (ELL) Proficiency Standards, and monitoring ELL student progress using a variety of assessment tools.
Prerequisite(s): Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. Meets ESL Endorsement and SEI Endorsement requirements in conjunction with other coursework.
Offered: Fall.

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: Admission to the Post-Degree Teacher Certification Program or Education Department is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Spring.

EDU 276 Foundation of Reading Instruction
3 cr. hrs. 3 periods (3 lec.)
Literacy instruction at the elementary school level. Topics include: literacy development theory; literacy development at the preschool, early childhood and intermediate grade level; instruction techniques for all facets of literacy development; comprehension strategies including bilingual learners and special population. Focus is on organizing classroom and curriculum to enhance literacy development and techniques and assessment as tools for instruction and working with parents to enhance students’ achievement.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. This class requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Fall.

EDU 277 Phonics Instruction in a Balanced Literacy Setting/Practicum
3 cr. hrs. 3 periods (3 lec.)
Overview and exploration to phonemic awareness, phonics instruction and related research findings. Includes quality literacy programming, understanding language and words, word study, learning about letters and words, and thinking comprehensively.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. This class requires a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Spring.

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: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: This course requires a 15-hour practicum.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Fall.
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: Admission to the Post-Degree Teacher Certification Program or Education department 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.
Offered: Fall.

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: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: This course requires a 15-hour practicum.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Spring.

EDU 281 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 teachers of English Language Learners (ELL). Includes an examination of ELL proficiency standards, assessment of ELLs, SEI foundations and strategies, using disaggregated data to differentiate instruction and parental involvement.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. This course includes a 15-hour practicum. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. Meets ESL Endorsement requirements in conjunction with other coursework.
Offered: Spring.

EDU 285 Secondary Teaching Methods
3 cr. hrs. 3 periods (3 lec.)
Introduction to variety of instructional, classroom management and assessment strategies pertinent to teaching in the secondary schools. Includes the role and function of the teacher in a secondary classroom setting, preparing for instruction, constructing lesson plans, assessment, instruction, classroom management, instructional media learning tools, and special needs students.
Information: Admission to the Post-Degree Teacher Certification Program or Education department 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.
Offered: Spring.

EDU 286 Structured English Immersion Methods (Completion)
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 teachers of English Language Learners (ELL). Includes an examination of ELL proficiency standards, assessment of ELLs, SEI foundations and strategies, using disaggregated data to differentiate instruction and parental involvement.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. This course is designed for currently practicing K-12 teachers and administrators. Meets ESL Endorsement and SEI Endorsement requirements in conjunction with other coursework. Also meets Arizona Department of Education course requirements.
Offered: Spring.

EDU 287 Structured English Immersion Foundations(Augmented Provisional)
3 cr. hrs. 3 periods (3 lec.)
Overview of Structured English Immersion (SEI) Foundations. Includes concepts designed to meet state standards for teachers of English Language Learners (ELLs). Also includes instruction in SEI strategies, teaching with Arizona English Language Learner (ELL) Proficiency Standards and monitoring ELL student progress using a variety of assessment tools.
Prerequisite(s): Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course.
Information: Admission to the Post-Degree Teacher Certification Program or Education department is required before enrolling in this course. This course is designed for currently practicing K-12 teachers and administrators. Meets ESL Endorsement and SEI Endorsement requirements in conjunction with other coursework. Also meets Arizona Department of Education course requirements.
Offered: Fall.
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: Admission to the Post-Degree Teacher Certification Program and TPP Internship and Education department approval is required before enrolling in this course. EDU 290A, 290B, 290C, and 290D together constitute EDU 290.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

Educational Technology Training
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

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.
Offered: May not be offered this year, check class schedule.
ETT 103 Introduction to the Internet in Education
3 cr. hrs. 3 periods (3 lec.)
Basic use of the internet for education. Includes network and telecommunication systems, web-based applications for teaching and learning, and audio-visual technologies. Also includes an introduction to distance education and issues in implementing internet technologies in schools.
Offered: May not be offered this year, check class schedule.

ETT 110 Blackboard Vista Course Development and Delivery
3 cr. hrs. 3 periods (3 lec.)
Overview, concepts, and techniques for online course preparation, delivery, and management using Blackboard Vista. Includes advanced web and Internet use, online course development, educational web site development, and use of Blackboard Vista, an online course development and management system.
Information: ETT 101 and 103 or equivalent computer knowledge and experience are required. Must be a Pima Community College (PCC) faculty (full-time or adjunct) or staff (full-time or part-time) or prospective faculty to register for this class. Frequent and reliable access to the Internet and Web is required.
Offered: May not be offered this year, check class schedule.

Electrical Utilities Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

EUT 100 Basic Electrical Theory and Electrical Print Reading
3 cr. hrs. 3 periods (3 lec.)
Introduction to the basics of direct current and alternating current circuits. Includes an overview of basic connection, interconnections and schematic diagrams. Also includes power formulas in both direct and alternating circuits and elementary electrical mathematics.
Offered: May not be offered this year, check class schedule.

EUT 101 Introduction to Electrical Utilities
3 cr. hrs. 3 periods (3 lec.)
Overview of the electrical utility field. Includes electricity generation, generating station, generation, transmission, and distribution, power policies and procedures, radio procedures, electrical utility disciplines, human resources, and system protection.
Offered: Fall.

EUT 102 Electrical Distribution Math
3 cr. hrs. 3 periods (3 lec.)
Basic math operations related to electrical distribution. Includes the review of basic math, solving and converting, basic algebra, and Ohm's Law.
Offered: Fall.

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.
Offered: Spring.

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.
Offered: Spring.
Emergency Medical Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring and Summer.

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.
Offered: Fall, Spring and Summer.

EMT 100 Basic Emergency Medical Technology
12 cr. hrs. 14 periods (11 lec., 3 lab)
Techniques of pre-hospital emergency medical care for the emergency medical technician. Includes history of emergency medical care delivery systems, roles and responsibilities of 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 CPR certification at the Healthcare Provider or Professional Rescuer Level and receive a minimum score of 80 on the Compass reading assessment. Students must show proof of personal medical insurance and provide immunization records for MMR, TD, TB skin Test, and Varicella. Students must provide a fingerprint card, submit to drug screening, and must meet with an advisor or EMT staff/faculty to complete a pre-enrollment worksheet prior to enrollment.
Offered: Fall, Spring, Summer.

EMT 110 First Responder
3 cr. hrs. 3 periods (3 lec.)
Techniques in pre-hospital emergency care appropriate to the First Responder 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. We will cover the DOT curriculum for EMT as well as the National Registry Practical portion of EMT.
Offered: Fall, Spring, Summer.
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 topic options: 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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

EMT 122 Burn Emergencies
.25 cr. hrs. .25 periods (.25 lec.)
Overview, techniques and skills for burn emergencies. Includes the following topics: general system pathophysiology, assessment, and management. Also includes current burn emergency trends.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 123 Neurological Emergencies
.25 cr. hrs. .25 periods (.25 lec.)
Concepts, techniques and skills for neurological emergencies. Includes the following neurological topics: general system pathophysiology, assessment, and management. Also includes integration and current trends in neurological emergencies.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 124 Toxicology Emergencies
.25 cr. hrs. .25 periods (.25 lec.)
Overview, techniques, and skills for toxicology emergencies. Includes the following topics: general and specific toxicology, assessment, management and current trends in toxicology emergencies.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 125 Abdominal Trauma
.25 cr. hrs. .25 periods (.25 lec.)
Overview, techniques, and skills for abdominal trauma emergencies. Includes the following topics: general system pathophysiology, organ injury assessment and management, organ injuries, pelvic fractures, and current trends in abdominal trauma.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 126 Environmental Emergencies
.25 cr. hrs. .25 periods (.25 lec.)
Overview, techniques, and skills for environmental emergencies. Includes the following environmental emergency topics: environmental illnesses, risk factors, general and specific system pathophysiology, assessment, heat and cold, near-drowning, diving, and current environmental emergency trends.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 127 Obstetric Emergencies
.25 cr. hrs. .25 periods (.25 lec.)
Concepts, techniques and skills for obstetric (OB) emergencies. Includes the following topics: anatomy and physiology of the reproductive system, general and specific assessment, complication of pregnancy, normal childbirth, routine care of the neonate, abnormal deliveries, and current obstetric emergency trends.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 128 Allergic Reaction
.25 cr. hrs. .25 periods (.25 lec.)
Overview, techniques, and skills for allergic reaction emergencies. Includes the following topics: anaphylaxis, pathophysiology, management of anaphylaxis and allergic reaction, and current trends in allergic emergencies.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.
EMT 129 Neonatal Resuscitation
1.25 cr. hrs. 1.25 periods (.25 lec.)
Overview, techniques, and skills for neonatal resuscitation emergencies. Includes the follow topics: risk factors, physiological adaptations at birth, neonate assessment and management, distressed newborn resuscitation, postresuscitation care, neonatal transport, and neonatal specific situations. Also includes common birth injuries and trends in neonatal emergencies.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 130 Rescue Operations
1.25 cr. hrs. 1.25 periods (.25 lec.)
Overview, techniques, and skills for rescue operations. Includes the following topics: surface water rescue, hazardous atmospheres, highway operations, hazardous terrain, vehicle rescue, assessment procedures, and current trends in rescue operations.
Information: Designed for Medical Service personnel interested in continuing education for Emergency state certification.
Offered: May not be offered this year, check class schedule.

EMT 140 Pre-Hospital Trauma Life Support
1 cr. hrs. 1 periods (1 lec.)
A review of the Prehospital Life Support (PHTLS) Provider and PHTLS Refresher course. Includes concepts, techniques, and support materials to provide PHTLS instructor-candidates with skills necessary to conduct and participate as faculty in an approved PHTLS course. Includes the styles of adult learners, suggestions on maximizing the learning experience of participants, and the administration components of the PHTLS courses.
Offered: May not be offered this year, check class schedule.

EMT 141 Pre-Hospital Trauma Life Support Refresher
1.25 cr. hrs. 1.25 periods (.25 lec.)
A review of the Prehospital Life Support (PHTLS) Provider and PHTLS Refresher course. Includes concepts, techniques, and support materials to provide PHTLS instructor-candidates with the knowledge, skills, and support materials necessary to conduct and participate as faculty in an approved PHTLS course. Also includes styles of adult learners, suggestions to maximize the learning experience of participants, and the administration components of the PHTLS courses.
Information: This course is designed for those who have achieved instructor-candidate potential upon successful completion of the EMT 140 PHTLS Provider and EMT 141 PHTLS Refresher courses. Advanced healthcare provider status and have experience teaching at the advanced practitioner level.
Offered: May not be offered this year, check class schedule.

EMT 142 Advanced Medical Life Support Instructor
1 cr. hrs. 1 periods (1 lec.)
A review of the Advanced Medical Life Support (AMLS) Provider and Refresher course. Concepts, techniques, and support materials to provide AMLS instructor-candidates with skills necessary to conduct and participate as faculty in an approved AMLS course. Includes the styles of adult learners, suggestions on maximizing the learning experience of participants, and the administration components of the AMLS courses.
Information: The AMLS instructor course is designed for students who have achieved instructor-candidate potential when successfully completing an AMLS provider or refresher course. The student must hold an advanced healthcare provider status and have experience teaching at the advanced practitioner level.
Offered: May not be offered this year, check class schedule.

EMT 143 Prehospital Trauma Life Support Instructor (PHTLS)
1 cr. hrs. 1 periods (1 lec.)
A review of the Prehospital Life Support (PHTLS) Provider and PHTLS Refresher course. Includes concepts, techniques and support materials to provide PHTLS instructor-candidates with the knowledge, skills, and support materials necessary to conduct and participate as faculty in an approved PHTLS course. Also includes styles of adult learners, suggestions to maximize the learning experience of participants, and the administration components of the PHTLS courses.
Information: This course is designed for those who have achieved instructor-candidate potential upon successful completion of the EMT 140 PHTLS Provider and EMT 141 PHTLS Refresher courses. Advanced healthcare provider status and experience teaching at the advanced practitioner level is required prior to enrolling in this course.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.
EMT 156 Advanced Cardiac Life Support Challenge
.25 cr. hrs. .25 periods (.25 lec.)
The Advanced Cardiac Life Support (ACLS) Challenge verifies the knowledge and skills needed to evaluate and manage
patients of all ages in cardiac arrest (as required by the American Heart Association Guidelines). Includes 10 core ACLS
cases: respiratory emergencies, four types of cardiac arrest: simple VF/VT, complex VF/VT, PEA, and asystole. Also
includes four types of prearrest emergencies: bradycardia, stable tachycardia, unstable tachycardia, and acute coronary
syndromes and stroke.
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.
Offered: May not be offered this year, check class schedule.

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. 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.
Information: May be taken six times for a maximum of nine credit hours.
Offered: May not be offered this year, check class schedule.

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.
Information: May be taken six times for a maximum of three credit hours.
Offered: May not be offered this year, check class schedule.

EMT 160 Heartsaver CPR and AED Provider
.5 cr. hrs. .5 periods (.5 lec.)
Concepts and techniques to assess and treat patients with airway obstruction, respiratory, and/or 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. Also includes the
choice of five topics: Adult Cardiopulmonary Resuscitation (CPR), Pediatric CPR, Adult Automatic External Defibrillator
(AED), Pediatric AED, and Infant CPR.
Information: Purchase of the Heartsaver CPR with AED Provider Manual prior to class is required.
Offered: May not be offered this year, check class schedule.

EMT 170 Advanced Life Support (ALS) Operations
1 cr. hrs. 1 periods (1 lec.)
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.
Offered: Contact department at 206-6350.

EMT 180 EMT Review - Theory and Practice
6 cr. hrs. 8 periods (4 lec., 4 lab)
Comprehensive review of the knowledge and skills required by certified emergency services professionals. Includes basic
preparation, airway, patient assessment, medical emergencies, trauma, special populations, and operations. Also includes
a variety of enrichment activities.
Information: Should be taken in conjunction with EMT 100.
Offered: May not be offered this year, check class schedule.

EMT 180A EMT Review - Theory and Practice Module A
3 cr. hrs. 4 periods (2 lec., 2 lab)
Comprehensive review of the knowledge and skills required by certified emergency services professionals. Includes basic
preparation, airway, patient assessment, and medical emergencies, trauma, special populations, and operations. Also
includes a variety of enrichment activities.
Information: Should be taken in conjunction with EMT 100.
Offered: Fall, Spring, Summer.

EMT 180B EMT Review - Theory and Practice Module B
3 cr. hrs. 4 periods (2 lec., 2 lab)
This course provides a comprehensive review of the knowledge and skills required by certified emergency services
professionals. Includes trauma, special populations, and operations. Also includes a variety of enrichment activities.
Information: Should be taken in conjunction with EMT 100.
Offered: May not be offered this year, check class schedule.
EMT 205 ALS Pharmacology and Medication Administration
3 cr. hrs. 3.25 periods (2.75 lec., .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.
Offered: Contact department at 206-6350.

EMT 214 ALS Advanced Special Considerations
2.5 cr. hrs. 3 periods (2 lec., 1 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.
Offered: Contact department at 206-6350.

EMT 218 Paramedic National Registry Preparation
3.5 cr. hrs. 6 periods (1 lec., 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 the Paramedic program is required before enrolling in this course.
Offered: Contact department at 206-6350.

EMT 219 ALS Foundations
1.5 cr. hrs. 1.75 periods (1.25 lec., .5 lab)
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 an Paramedic program is required before enrolling in this course.
Offered: Contact department at 206-6350.

EMT 221 ALS Airway and Ventilation
1.5 cr. hrs. 2 periods (1 lec., 1 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.
Offered: Contact department at 206-6350.

EMT 222 ALS Patient Assessment and Assessment Based Management
1.5 cr. hrs. 1.75 periods (1.25 lec., .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.
Offered: Contact department at 206-6350.

EMT 223ALS Trauma Emergencies and Systems
2 cr. hrs. 2.25 periods (1.75 lec., .5 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.
Offered: Contact department at 206-6350.

EMT 224 ALS Medical Emergencies
4 cr. hrs. 5 periods (3 lec., 2 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.
Offered: Contact department at 206-6350.

EMT 225 ALS Special Medical Considerations
2 cr. hrs. 2.25 periods (1.75 lec., .5 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.
Offered: Contact department at 206-6350.
EMT 227 LC ALS Practicum: Clinical Lab
3 cr. hrs. 9 periods (9 lab)
Techniques for performing skills and completing documentation in accordance with established guidelines, orders, and protocols, and act within the scope of practice of the Advanced Life Support (ALS) Professional and under medical supervision. Includes critical care, emergency department, labor and delivery, pediatrics, and specialty units.
Information: Acceptance into the Paramedic program is required before enrolling in this course.
Offered: Contact department at 206-6350.

EMT 228 LC ALS Practicum: Vehicular Lab
3 cr. hrs. 9 periods (9 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.
Offered: Contact department at 206-6350.

EMT 230 Basic ECG Interpretation
1.5 cr. hrs. 1.75 periods (1.25 lec., .5 lab)
Introduction to all levels of emergency care providers with basic electro-cardiographic (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.
Information: This course is designed for paramedics and paramedic students.
Offered: Contact department at 206-6350.

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.
Offered: May not be offered this year, check class schedule.

EMT 234 Heartsaver First Aid Instructor
.75 cr. hrs. .75 periods (.75 lec.)
Concepts, techniques, and skills in how to teach Heartsaver First Aid (HSAFA) for instructors. Includes basic HeartSaver First Aid instructor principles, course management, personnel issues, time and resource management, and remediation.
Information: To become a HSFAI, the candidate must already be an Instructor in Basic Life Support (BLS) or Heartsaver - HS CPR; therefore there are no proficiency requirements other than current card in respective discipline and good standing with AHA.
Offered: May not be offered this year, check class schedule.

EMT 235 Phlebotomy
2 cr. hrs. 2.5 periods (1.5 lec., 1 lab)
Overview and practical application of phlebotomy procedures and techniques. Includes the healthcare setting, overview of the human body, blood collection procedures, and special procedures.
Information: AZ Post Certified Law Enforcement Officer or other Criminal Justice employee must have written recommendation from agency. Must also have approval from agency Phlebotomy coordinator.
Offered: May not be offered this year, check class schedule.

EMT 236 Phlebotomy Refresher
.5 cr. hrs. .5 periods (.5 lec.)
Review of techniques and theory including up-to-date information regarding phlebotomy procedures, equipment, and legal issues. Designed to offer Law Enforcement Officers and employees of a Criminal Justice Agency, who have previously completed the 40-hour Phlebotomy for Law Enforcement Program. Also includes content suggested for maintaining continued competency while practicing phlebotomy procedures for Criminal Justice purposes.
Information: AZ Post Certified Law Enforcement Officer or other Criminal Justice employee must have written recommendation from agency. Must also have approval from agency Phlebotomy coordinator.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.
EMT 241 Emergency Pediatric Care (EPC) Instructor
1 cr. hrs. 1 periods (1 lec.)
Overview of concepts and techniques used by the Emergency Pediatric Care (EPC) instructor. Includes a review of basic principles of emergency pediatric care, methods of patient assessment, medical emergencies, pediatric trauma, and special populations. Also includes introduction to needs of the adult learner, suggestions on maximizing the learning experience, and administrative components of the EPC course.

Information: This is an advanced course requiring previous working knowledge of pediatric trauma and medical emergencies. Course is restricted to: EMT-P, RN, MD, DO, and other advanced level healthcare providers who must have at least one year of clinical experience and complete the pre-test before beginning course.
Offered: Fall, Summer and Spring.

EMT 242 ALS Advanced Foundations
2 cr. hrs. 2.5 periods (1.5 lec., 1 lab)
Foundations of skills and principles in preparing to be a paramedic. Includes medical terminology, the human body structure, and pathophysiology.

Information: Acceptance into the Paramedic program is required before enrolling in this course.
Offered: Contact department at 206-6350.

EMT 243 Emergency Pediatric Care (EPC) Initial
1.5 cr. hrs. 1.5 periods (1.5 lec.)
Concepts, techniques, and skills associated with medical and trauma emergencies for the newborn and pediatric patient. Includes in-depth study of emergency pediatric care, methods of patient assessment, medical emergencies, pediatric trauma, and management of Children with Special Health Care Needs (CSHCN).

Information: This is an advanced course requiring previous working knowledge of pediatric trauma and medical emergencies. Course is restricted to EMT-P, RN, MD, DO, and other advanced level-healthcare providers who must have at least one year of clinical experience and complete the pre-test before beginning course.
Offered: Fall, Spring, Summer.

EMT 244 ALS Advanced Medical Emergencies
2.5 cr. hrs. 3 periods (2 lec., 1 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.
Offered: Contact department at 206-6350.

EMT 247LC ALS Advanced Practicum: Clinical Lab
3 cr. hrs. 9 periods (9 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.
Offered: Contact department at 206-6350.

EMT 248LC ALS Advanced Practicum: Vehicular Lab
3 cr. hrs. 9 periods (9 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.
Offered: Contact department at 206-6350.

EMT 250 Advanced Cardiac Care
1.5 cr. hrs. 2 periods (1 lec., 1 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.

Offered: Contact department at 206-6350.

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.

Offered: May not be offered this year, check class schedule.
EMT 252 Pediatric Advanced Life Support
1.5 cr. hrs. 2 periods (1 lec., 1 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).
Offered: Contact department at 206-6350.

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).
Offered: May not be offered this year, check class schedule.

EMT 254 Advanced ECG Interpretation
3 cr. hrs. 3.5 periods (2.5 lec., 1 lab)
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.
Offered: Contact department at 206-6350.

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.
Offered: May not be offered this year, check class schedule.

EMT 256 International Trauma Life Support
1.5 cr. hrs. 2 periods (1 lec., 1 lab)
Techniques for evaluating assessment findings to formulate a field impression and implementation of the treatment plan. Includes systemic approach to patient assessment and management, airway and ventilation, shock, soft tissue and burn injuries, isolated and multi-systems trauma, and various types of trauma patients.
Offered: May not be offered this year, check class schedule.

EMT 257 International Trauma Life Support Refresher
.75 cr. hrs. 1 periods (.5 lec., .5 lab)
Overview of techniques for evaluating assessment findings to formulate a field impression and implementation of the treatment plan. Includes systemic approach to patient assessment and management, airway and ventilation, shock, soft tissue and burn injuries, isolated and multi-systems trauma, and various types of trauma patients.
Offered: May not be offered this year, check class schedule.

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.
Offered: Contact department at 206-6350.

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.
Offered: May not be offered this year, check class schedule.

EMT 260 Advanced Life Support Refresher
3 cr. hrs. 3.5 periods (2.5 lec., 1 lab)
Introduction of skills to enhance knowledge regarding roles and responsibilities of an emergency medical technician and utilize the assessment findings to formulate a field impression and implement the treatment plan. Includes airway, ventilation, and oxygen therapy; trauma and shock management; medical emergencies; special patient care; and special scene operations.
Offered: May not be offered this year, check class schedule.
EMT 261 National Registry of Emergency Medical Technician Evaluator  
1.5 cr. hrs. 2 periods (1 lec., 1 lab)  
Techniques used to prepare for and implement the evaluation criteria for all basic and advanced level pre-hospital emergency medical technology skills involving candidates testing for National Registry of Emergency Medical Technician (EMT) Certification. Also includes information on ethics and professionalism, evaluator and participant criteria, roles and responsibilities, candidate stress and station preparation and implementation.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: Contact department at 206-6350.

EMT 264 Tox-Medic Refresher  
.5 cr. hrs. .5 periods (.5 lec.)  
Continuation of EMT 263. Provides paramedics with continuing training in identification, assessment, and treatment of victims exposed to hazardous materials.  
Prerequisite(s): EMT 263.  
Offered: May not be offered this year, check class schedule.

EMT 295 ALS Independent Research  
3 cr. hrs. 3 periods (3 lec.)  
Independent research in advanced pre-hospital care.  
Information: To be arranged by instructor.  
Offered: Contact department at 206-6350.

Engineering  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ENG 102IN Problem-Solving and Engineering Design  SUN# EGR 1102  
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 151 and 182 or MAT 187.  
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.  
Offered: Fall, Spring.

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 151 and MAT 220 or concurrent enrollment.  
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.  
Offered: Fall, Spring.

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 108.  
Information: Prerequisite(s) may be waived with high school geometry.  
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.  
Offered: Fall.
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 108.
Information: Prerequisite may be waived with high school geometry. IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring

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 151 and 182 or MAT 187.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Spring.

ENG 170IN Problem-Solving Using Computers
3 cr. hrs. 5 periods (2 lec., 3 lab)
Design of problem-solving algorithms. Includes structure of C programs, data types, operations, and basics of C, selection, repetition, arrays, functions, data files, addresses and pointers, character strings, and engineering applications.
Prerequisite(s): MAT 151 and 182 or MAT 187.
Information: IN is the integrated version of the course with lecture and lab taught simultaneously.
Offered: Fall, Spring.

ENG 175IN Computer Programming for Engineering Applications
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 151 and 182 or MAT 187.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

ENG 210 Engineering Mechanics: Statics
3 cr. hrs. 3 periods (3 lec.)
Engineering analysis of static mechanical systems. Includes vector algebra, equilibrium of particles and rigid bodies, forces, moments, couples, equivalent force systems, analysis of simple structures (trusses, beams, frames, cables, machines), friction, first and second moments of area (moment of inertia).
Prerequisite(s): MAT 231 and PHY 210/210LB or 210IN.
Offered: Fall, Spring.

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.
Offered: Spring.

ENG 220 Engineering Mechanics: Dynamics
4 cr. hrs. 4 periods (4 lec.)
Study of the motion of bodies under the action of forces. Includes introduction to dynamics, kinematics of particles and rigid body, kinetics of particles and rigid body, and vibration.
Prerequisite(s): ENG 210, MAT 241.
Offered: Fall, Spring.

ENG 230 Mechanics of Materials
4 cr. hrs. 4 periods (4 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, and columns.
Prerequisite(s): ENG 210.
Offered: Fall, Spring.
ENG 232 Thermodynamics
4 cr. hrs. 4 periods (4 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): MAT 241 and PHY 216.
Offered: Spring.

ENG 250 Numerical Analysis for Engineers
3 cr. hrs. 3 periods (3 lec.)
Applications of numerical methods and computer programming techniques for the creation of mathematical models of engineering systems. Includes roots of equations, linear simultaneous equations, numerical integration, ordinary differential equations, interpolation and curve fitting.

Prerequisite(s): ENG 170IN or 175IN, and MAT 231.
Offered: Fall, Spring.

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 216/216LB or 216IN.
Offered: Fall, Spring.

ENG 274IN Digital Logic
3 cr. hrs. 5 periods (2 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): MAT 231 and PHY 216IN.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall.

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 262, PHY 216/216LB/216IN.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Spring.

English as a Second Language
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ESL 050 English for Beginners
6 cr. hrs. 6 periods (6 lec.)
Introduction to the basics of English as a second language through an integrated skills approach: reading, writing, listening, and speaking. Includes letters of the alphabet, basic pronunciation rules, day-to-day communication, foundational grammar, writing conventions, and study skills.

Recommendation: For students with no previous knowledge of English.
Offered: Fall, Summer.

ESL 050GR Grammar for Beginners
3 cr. hrs. 3 periods (3 lec.)
Fundamentals of grammar with a focus on English in everyday life. Includes verb tense and mood, sentence structure, and parts of speech.

Prerequisite(s): Required score on ESL assessment test.
Recommendation: Concurrent enrollment in ESL 050 is highly recommended.
Offered: May not be offered this year, check class schedule.
ESL 060 English for Speakers of Other Languages I  
6 cr. hrs. 6 periods (6 lec.)  
Basic-level, integrated-skills course for non-native speakers of English with some, but limited, English ability. Includes practice in listening, speaking, pronunciation, vocabulary building, grammar, reading, writing, and learning strategies. Emphasizes the development of English proficiency and exposure to American culture through meaningful communication.  
**Prerequisite(s):** ESL 050 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.  
**Offered:** Fall, Spring, Summer.

ESL 060CN Conversation I  
3 cr. hrs. 3 periods (3 lec.)  
Beginning-level conversational skills for situations and tasks relevant to daily life, social interactions, and personal interests. Includes conversing about a range of topics with communicative appropriateness, basic vocabulary and language functions, and exploration of college resources.  
**Prerequisite(s):** ESL 050 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.  
**Offered:** Fall.

ESL 060CU Introduction to American Culture  
3 cr. hrs. 3 periods (3 lec.)  
Basic-level integrated skills course on American culture for ESL students. Includes cultural adjustment, various topics on American culture, and basic English language skills development.  
**Prerequisite(s):** ESL 050 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.  
**Offered:** May not be offered this year, check class schedule.

ESL 060GR English Grammar I  
3 cr. hrs. 3 periods (3 lec.)  
Fundamentals of grammar with a focus on English in everyday life. Includes verb tense and mood, sentence structure, and parts of speech.  
**Prerequisite(s):** ESL 050 with a C or better, or required score on ESL assessment test.  
**Recommendation:** Concurrent enrollment in ESL 060 is highly recommended.  
**Information:** Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.  
**Offered:** Fall, Spring.

ESL 060JB English on the Job I  
3 cr. hrs. 3 periods (3 lec.)  
Basic job-related English for non-native speakers of English with some, but limited English ability. Includes language skills needed for entry-level job search, starting a new job, following safety rules, and understanding American culture in the workplace.  
**Prerequisite(s):** ESL 050 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.  
**Offered:** May not be offered this year, check class schedule.

ESL 060PR Pronunciation I  
3 cr. hrs. 3 periods (3 lec.)  
Pronunciation and spelling for non-native English at the introductory and basic levels. Includes an introduction to pronunciation improvement, basic sound-symbol patterns and production of corresponding sounds, stress, rhythm, and intonation, and fluency within communicative contexts.  
**Prerequisite(s):** ESL 050 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.  
**Offered:** Spring.

ESL 070 English for Speakers of Other Languages II  
6 cr. hrs. 6 periods (6 lec.)  
Intermediate-level, integrated skills for non-native speakers of English with an emphasis on improving English proficiency and understanding of American culture. Includes continued practice in listening, speaking, pronunciation, vocabulary building, grammar, reading, writing, and learning strategies. Also includes using computer technology for word processing and using college and community resources.  
**Prerequisite(s):** ESL 060 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.  
**Offered:** Fall, Spring, Summer.
ESL 070CN Conversation II  
3 cr. hrs. 3 periods (3 lec.)  
Intermediate-level conversational skills for increased fluency and comprehension. Includes conversing about a variety of  
topics with increased proficiency and communicative appropriateness, vocabulary building skills, range of language  
functions, and increased awareness of college resources.  
Prerequisite(s): ESL 060 or higher 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.  
Offered: Fall, Spring.

ESL 070CT Computer Technology to Develop English Skills  
3 cr. hrs. 3 periods (3 lec.)  
Instruction and practice using computer technology to enhance English skill development. Includes computer operation  
and applications, oral and written English communication skills, and application of technological skills to enhance personal  
English development. Also includes utilizing ESL software, ESL websites and the World Wide Web.  
Prerequisite(s): ESL 060 or higher 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.  
Offered: May not be offered this year, check class schedule.

ESL 070CU Survey of American Culture  
3 cr. hrs. 3 periods (3 lec.)  
Intermediate-level course on American culture for ESL students. Includes an introduction to a variety of topics in American  
culture through readings, video and audio clips, and English language skills development.  
Prerequisite(s): Completion of ESL 060 or higher with a grade of 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.  
Offered: Spring.

ESL 070GR English Grammar II  
3 cr. hrs. 3 periods (3 lec.)  
Intermediate level grammar with focus on English in everyday life. Includes verb tense and mood, sentence structure, and  
parts of speech.  
Prerequisite(s): ESL 060 with a C or better, or required score on ESL assessment test.  
Recommendation: Concurrent enrollment in ESL 070 is highly recommended.  
Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.  
Offered: Fall, Spring.

ESL 070JB English on the Job II  
3 cr. hrs. 3 periods (3 lec.)  
General workplace communication skills for intermediate ESL students. Includes job search skills, communication with  
supervisors and co-workers, expectations and culture in the American workplace, employee rights and responsibilities, and  
problem-solving strategies.  
Prerequisite(s): ESL 060 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.  
Offered: May not be offered this year, check class schedule.

ESL 070PR Pronunciation II  
3 cr. hrs. 3 periods (3 lec.)  
Pronunciation for non-native English speakers at the intermediate level. Includes introduction to pronunciation  
improvement, use of pronunciation keys and symbols, suprasegmentals, and increasing fluency within communicative  
contexts.  
Prerequisite(s): ESL 060 or higher 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.  
Offered: Fall, Spring.

ESL 080 English for Speakers of Other Languages III  
6 cr. hrs. 6 periods (6 lec.)  
Upper-intermediate-level, integrated-skills course for students with emphasis on improving English proficiency and  
understanding of American culture. Includes continued practice in listening, speaking, pronunciation, vocabulary building,  
grammar, reading, writing, and learning strategies. Also includes orientation to college resources.  
Prerequisite(s): ESL 070 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.  
Offered: Fall, Spring, Summer.
ESL 080CN Conversation III  
3 cr. hrs. 3 periods (3 lec.)  
Advanced-level conversational skills for increased fluency and comprehension. Includes conversational conventions, vocabulary, critical thinking skills, language functions, and non-verbal communication.  
**Prerequisite(s):** ESL 070 or higher 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.  
**Offered:** Fall, Spring.

ESL 080CU American English and Culture through Film  
3 cr. hrs. 3 periods (3 lec.)  
Intermediate-level study of American English and culture through film. Includes exploration of American cultural values and icons. Also includes an emphasis on the development of listening comprehension skills, speaking, and writing.  
**Prerequisite(s):** ESL 070 or higher 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.  
**Offered:** May not be offered this year, check class schedule.

ESL 080GR English Grammar III  
3 cr. hrs. 3 periods (3 lec.)  
Intermediate level grammar with a focus on English in everyday life. Includes verb tense and mood, sentence structure and parts of speech.  
**Prerequisite(s):** ESL 070 with a C or better, or required score on ESL assessment test.  
**Recommendation:** Concurrent enrollment in ESL 080 is highly recommended.  
**Information:** Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.  
**Offered:** Fall, Spring.

ESL 080PR Pronunciation III  
3 cr. hrs. 3 periods (3 lec.)  
Pronunciation for non-native English speakers at the advanced level. Includes strategies for continued pronunciation improvement, use of pronunciation keys and symbols, suprasegmentals, and increased fluency within communicative contexts.  
**Prerequisite(s):** ESL 070 or higher 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.  
**Offered:** Spring.

ESL 085 Academic English I  
6 cr. hrs. 6 periods (6 lec.)  
High-intermediate-level, integrated academic skills for non-native speakers of English. Includes four content-based units including texts and discourse on academic topics, high-intermediate grammatical structures, writing about topics relevant to academic course work, word processing, using the internet, and goal setting.  
**Prerequisite(s):** ESL 080 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.  
**Offered:** Fall, Spring, Summer.

ESL 085CU Exploring American Film  
3 cr. hrs. 3 periods (3 lec.)  
Advanced English language skills development through exploration of topics on American film. Includes analysis and discussion of genres and artistic elements of popular American films. Also includes an emphasis on development of listening comprehension skills, speaking, writing, and critical thinking skills.  
**Prerequisite(s):** ESL 080 or higher with a C or better or concurrent enrollment, or required score on ESL assessment test.  
**Information:** Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.  
**Offered:** Fall, Spring.

ESL 085GR Academic Grammar I  
3 cr. hrs. 3 periods (3 lec.)  
Advanced level grammar with a focus on written English in academic contexts. Includes verb tense and mood, sentence structure, parts of speech and other structures.  
**Prerequisite(s):** ESL 080 with a C or better, or required score on ESL assessment test.  
**Recommendation:** Concurrent enrollment in ESL 085 is highly recommended.  
**Information:** Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.  
**Offered:** Fall, Spring.
ESL 088 Academic English II
6 cr. hrs. 6 periods (6 lec.)
Advanced-level, integrated academic skills for non-native speakers of English. Includes four content-based units including text and discourse on academic topics, advanced grammatical structures, reading academic texts, writing about academic topics, using word processing and the internet, and goal setting.
Prerequisite(s): ESL 085 with a C or better or required score on the ESL assessment test.
Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.
Offered: Fall, Spring.

ESL 088GR Academic Grammar II
3 cr. hrs. 3 periods (3 lec.)
Advanced level grammar with a focus on written English in academic contexts. Includes verb tense and mood, sentence structure, structural analysis and other structures.
Prerequisite(s): ESL 085 with a C or better, or required score on ESL assessment test.
Recommendation: Concurrent enrollment in ESL 088 is highly recommended.
Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.
Offered: Fall, Spring.

ESL 088TO Comprehensive TOEFL Preparation
3 cr. hrs. 3 periods (3 lec.)
Comprehensive Test of English as a Foreign Language (TOEFL) test preparation for ESL/EFL students. Includes introduction to the TOEFL and the test-taking strategies, skill review with intensive practice for all four test components: grammar, listening and speaking, Test of Written English (TWE), reading and vocabulary, and the TOEFL guidelines and procedures.
Prerequisite(s): ESL 085 with a C or better, or required score on the ESL assessment test.
Information: Prerequisite(s) may be waived with consent of instructor. See an ESL instructor for details.
Offered: Fall, Spring.

Environmental Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ENV 105 Humanity and the Environment
3 cr. hrs. 3 periods (3 lec.)
Technical, sociocultural, and political information on environmental science and technology for non-ENV majors. Includes ecosystems, population impacts, hydrological systems, air pollution, and environmental toxins. Also includes current topics such as the green house effect, acid rain, drinking water contamination, toxic waste spills, governmental regulation and enforcement, and future environmental trends.
Corequisite(s): ENV 105LB.
Information: Same as ANT 105.
Offered: Fall, Spring.

ENV 105LB Humanity and the Environment Discovery Laboratory
1 cr. hrs. 3 periods (3 lab)
Laboratory exercise and field trip experiences as applied to the relationship between humanity and the environment. Includes examining ecology and biodiversity, healthy-carrying capacity models, and waste by-products and their sources. Also includes designing pollution prevention and sustainable campus/town models, developing increased environmental ethics in our society, and anthropological relationships to the environment.
Corequisite(s): ENV 105.
Information: This laboratory course satisfies the fourth credit hour of the Biological and Physical Science general education transfer credit if taken along with ENV 105.
Information: Same as ANT 105LB.
Offered: Fall, Spring.

ENV 196 Independent Study in Environmental Technology
1-3 cr. hrs. .75-8.25 periods (.25-2.75 lec., .5-5.5 lab)
Independent study in Environmental Technology. Content to be determined by conference between student and instructor.
Information: Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.
2.5 cr. hrs. 3 periods (2 lec., 1 lab)  
Protection of personnel in contact with hazardous materials. Includes basic toxicology, personal protection and safety, hazard identification systems, recognition and identification of hazardous materials, hazard classes and their properties, site emergencies, spill control and clean up. Meets OSHA requirements for business, industry, and government hazardous materials handlers.  
Recommendation: Completion of ENV 100 before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

ENV 296 Advanced Independent Study in Environmental Technology  
1-3 cr. hrs. .75-8.25 periods (.25-2.75 lec., .5-5.5 lab)  
Independent study in Environmental Technology. Content to be determined by conference between student and instructor.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

ENV 299 Introduction to Co-op: Environmental Technology  
1 cr. hrs. 1 periods (1 lec.)  
Principles of job success. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience.  
Corequisite(s): ENV 299WK.  
Information: Emphasis on attitude adjustment.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

ENV 299WK Co-op Work: Environmental Technology  
1-8 cr. hrs. 5-40 periods (5-40 lab)  
A supervised cooperative work program for students in an occupation related area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.  
Corequisite(s): ENV 299.  
Information: May be taken two times for a maximum of sixteen credit hours.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

Environmental Technology — Experiential Education — Fashion Design and Clothing

Experiential Education
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

EED 110 Prior Learning Assessment  
1-6 cr. hrs. 1-6 periods (1-6 lec.)  
Explore credit options through the development of an individual's portfolio. Includes how to collect and present materials which identify, describe, and validate professional training and experiential learning which can be evaluated for college-level credit equivalency. Students in this course must be willing to spend considerable time in the preparation of the portfolio which can be submitted to a portfolio evaluator.  
Information: A maximum of nine credits may be earned for the EMT-Basic program; students must register for two credits.  
Information: A maximum of 36 credits may be earned for the Fire Science, Corrections, Juvenile Corrections, and Intermediate EMT programs; students must register for three credits.  
Information: A maximum of 50 credits may be earned for the EMT Paramedic and Law Enforcement programs; students must register for six credits.  
Information: A maximum of 9 credits may be earned by students who have earned credits previously in this course; students must register for one credit.  
Offered: May not be offered this year, check class schedule.

Fashion Design and Clothing
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.  
Offered: Fall.
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.
Offered: Fall, Spring.

FDC 112 Alteration and Pattern Fitting
3 cr. hrs. 5 periods (2 lec., 3 lab)
Methods of altering commercial patterns and principles of fitting garments. Includes fitting a commercial pattern, making a muslin, construct a design using fit techniques, and evaluation of standards of fitting and relationship to styles.
Offered: Spring.

FDC 121 Flat Pattern Making
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.
Prerequisite(s): FDC 111.
Offered: Fall, Spring.

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.
Offered: Spring.

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.
Prerequisite(s): FDC 111, 121.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Spring.

FDC 126 Textiles
3 cr. hrs. 5 periods (2 lec., 3 lab)
Technology and science, art and design, and global industry of textiles. Includes emphasis on performance of textile products in apparel, furnishings, industry, geotextiles, transportation and space exploration. Also includes the components of textile products: fibers, yarns, fabric construction, coloration and finishes, current and developing technology, and environmental effects.
Offered: Spring.

FDC 131 Wardrobe and Styling
3 cr. hrs. 3 periods (3 lec.)
Introduction to the function of wardrobe in contemporary life. Includes the clothing and wearer, current theories on wardrobe, art applied to wardrobe and the individual, and the core working wardrobe, wardrobe issues, and ritual of dress.
Offered: Fall.

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, clothing as messenger, the ritual of dress, global fashion for the masses, and life stages and clothing and image needs.
Offered: Fall.

FDC 135 Fashion Show/Event Planning
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.
Offered: Spring.

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.
Offered: Spring.
FDC 142 Restyling and Alterations
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to techniques for recycling and increasing the life and function of garments. Includes measurement, making, and fitting, techniques for stitching in alternation and fitting, restyling, repair, and conservation of fabric and garments.
Prerequisite(s): FDC 111.
Offered: Fall.

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.
Recommendation: Completion of ART 110 or 213 before enrolling in this course.
Offered: Spring.

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. Students must have taken at least twelve (12) credit hours in FDC courses before enrolling in this course.
Offered: Fall, Spring.

FDC 199 Introduction to 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 of department chair and successful completion of twelve (12) credit hours of FDC course work are required before enrolling in this course.
Information: May be taken four times for a maximum of four credit hours.
Offered: May not be offered this year, check class schedule.

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): ART 199.
Information: Consent of instructor or department chair and successful completion of twelve (12) credit hours of FDC course work are required before enrolling in this course.
Information: May be taken four times for a maximum of twenty credit hours.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring.

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 112, 211 with a grade of B or better.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Spring.

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 112, 211 with a grade of B or better.
Information: Prerequisites may be waived with consent of instructor.
Offered: Spring.
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 111 and 211 with a grade of B or better.
Recommendation: Successful completion of FDC 212 before enrolling in this course.
Offered: Spring.

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.
Offered: Spring.

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.
Offered: Spring.

FDC 224 Computer Patternmaking III
3 cr. hrs. 5 periods (2 lec., 3 lab)
Continuation of FDC 223. Includes computer marker making, creation of technical sketches for use in production, and computer measurement grading.
Prerequisite(s): FDC 223.
Offered: Spring.

FDC 241 Draping I
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.
Prerequisite(s): FDC 111 and 211 with a grade of B or better.
Recommendation: Completion of FDC 211 with a grade of B or better before enrolling in this course.
Offered: Fall.

FDC 242 Draping II
3 cr. hrs. 5 periods (2 lec., 3 lab)
Continuation of FDC 241. Advanced draping techniques for fashion design to include the design and construction of a formal apparel item. Includes muslin for advanced apparel designs, yardage calculation, specialty fashion fabrics, constructing the formal wear or bridal design, and formal apparel evaluation.
Prerequisite(s): FDC 211 and 241 with a grade of B or better.
Offered: Spring.

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.
Prerequisite(s): FDC 111, 144 with a B or better.
Recommendation: Completion of ART 100 before enrolling in this course.
Offered: Spring.

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.
Recommendation: For advanced students who have completed coursework in their specific areas.
Information: Portfolio concentrations will be determined in a conference between student and instructor.
Information: Same as ART 288.
Offered: Fall.
FDC 289 Fashion Design and Clothing Capstone
3 cr. hrs. 5 periods (2 lec., 3 lab)
Development and creation of individual original garments incorporating skills acquired through previous courses. Includes capstone project overview, development of a five piece collection, and presenting the garment line.
Prerequisite(s): FDC 111, 112, 121, 122, 126, 141, 144, 211, 241.
Offered: Spring.

Finance
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

FIN 100 Basic Principles of Organizational Finance
1 cr. hrs. 1 periods (1 lec.)
Introduction to the fundamental principles of finance. Includes basic financial concepts in industry and banking, the role of financial decision-makers, financial statements, common ratios, time value of money, and investment decisions.
Offered: Spring.

FIN 107 Business Finance
3 cr. hrs. 3 periods (3 lec.)
Fundamental principles of finance in profit-making, governmental, and not-for-profit organizations. Includes financial statements, common ratios, budgeting systems, cash forecasting, time value of money, investment decision, and break-even analysis.
Offered: May not be offered this year, check class schedule.

FIN 120 Financial Strategies: Rich Dad Poor Dad
3 cr. hrs. 3 periods (3 lec.)
Principles, processes and tools that represent a new paradigm for financial literacy based on the book Rich Dad Poor Dad. Includes wealth vocabulary, need for financial literacy, rich don’t work for money, teaching financial literacy, cashflow quadrant, power of corporations, rich invent money, work to learn—don’t work for money.
Offered: May not be offered this year, check class schedule.

FIN 190 Internship in Finance
1-3 cr. hrs. 5-15 periods (5-15 lab)
Supervised internship in a financial workplace. Includes experiences supervised by a professional in the field.
Information: Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

FIN 217 Analyzing Financial Data
1 cr. hrs. 1 periods (1 lec.)
Overview of financial data analysis. Includes income statement analysis and interpretation, retained earnings statement, balance sheets, statement of changes in financial position, sources of data, key financial ratios, and analysis procedures.
Prerequisite(s): ACC 101.
Offered: Spring.

Fire Science
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

FSC 101 Principles of Emergency Services
3 cr. hrs. 3 periods (3 lec.)
Overview of 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.
Offered: May not be offered this year, check class schedule.

FSC 104 Fire Science Careers
1-2 cr. hrs. 1-2 periods (1-2 lec.)
Introduction to careers in fire science. Includes the role of the fire fighter, careers in fire fighting, extrication, and fire chemistry. Also includes Air Pak, protective clothing, and the integration of fire sciences with Emergency Medical Services and law enforcement careers.
Offered: May not be offered this year, check class schedule.
FSC 110 Rope I
1 cr. hrs. 1 periods (1 lec.)
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.
Offered: May not be offered this year, check class schedule.

FSC 111 Rope II
1 cr. hrs. 1 periods (1 lec.)
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.
Offered: May not be offered this year, check class schedule.

FSC 112 Rope III
1 cr. hrs. 1 periods (1 lec.)
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.
Offered: May not be offered this year, check class schedule.

FSC 116 Confined Space I for First Responders
1 cr. hrs. 1 periods (1 lec.)
Introduction to confined space rescue operations including the OSHA regulations governing permit requirements for confined spaces. Includes hazards associated with confined space rescues and means to mitigate these hazards. Also includes Incident Command System recommended to manage confined space rescues as well as an introduction to the equipment used in these rescues.
Recommendation: Complete FSC 110, 111, 112 and Hazardous Materials First Responder Certification prior to enrolling in this course.
Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.
Offered: May not be offered this year, check class schedule.

FSC 117 Confined Space II for First Responders
1 cr. hrs. 1 periods (1 lec.)
Continuation of FSC 116. Overview of the OSHA regulations governing permit required confined spaces, the hazards associated with confined space rescues, and the means to mitigate these hazards. Includes an emphasis on the practical application of these concepts through hands-on activities.
Prerequisite(s): FSC 116.
Recommendation: Complete FSC 110, 111, 112, and Hazardous Materials First Responder Certification prior to enrolling in this course.
Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 Special Operations, NFPA 1670.
Offered: May not be offered this year, check class schedule.

FSC 118 Swift Water Rescue for First Responders
1 cr. hrs. 1 periods (1 lec.)
Concepts and techniques to prepare the emergency responder to perform swift water rescue. Includes rescuer safety and philosophy, river dynamics, hydrology and hazards, and methods of effecting swift water rescues including boat handling operations. Includes basic water accident management techniques in still water. Also includes the water accident portion of this course taught at a swimming pool and the practical application conducted in moving water.
Prerequisite(s): FSC 110, 110, 112.
Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.
Offered: May not be offered this year, check class schedule.
FSC 121 Trench Rescue for First Responders
1.25 cr. hrs. 1.25 periods (1.25 lec.)
Concepts and techniques to prepare the emergency responder to perform trench rescues. Includes rescuer safety, the OSHA regulation governing trench operations, trench hazards and soil classifications, rescue procedures and the creation of safe areas in which to work within the trench.

Recommendation: Complete FSC 110, 111, 112, 117 and Hazardous Materials First Responder Certification prior to enrolling in this course.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

Offered: May not be offered this year, check class schedule.

FSC 122 Structural Collapse Rescue for First Responders
1.25 cr. hrs. 1.25 periods (1.25 lec.)
Concepts and techniques to prepare the emergency responder to perform rescues in collapsed or structurally compromised buildings. Includes rescuer safety, types of building materials and their properties, hazards to rescuers, calculating weights of building materials and their capacities, development of a structural collapse rescue plan, debris removal and possible victim locations. Also includes the FEMA structure marking system, cribbing procedures, and the construction of various shoring systems.

Prerequisite(s): FSC 121.

Recommendation: Complete FSC 110, 111, 112, 116, and 117 prior to enrolling in this course.

Information: This class meets State of Arizona Fire Marshal requirements: NFPA 1983, NFPA 1500 special operations, NFPA 1670.

Offered: May not be offered this year, check class schedule.

FSC 130 Strength and Fitness for the Fire Service
2.5 cr. hrs. 2.5 periods (2.5 lec.)
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.

Offered: May not be offered this year, check class schedule.

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.

Offered: May not be offered this year, check class schedule.

FSC 150 Fire Operations II
4 cr. hrs. 5 periods (3 lec., 2 lab)
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.

Offered: May not be offered this year, check class schedule.

FSC 151 Introduction to Fire Science
3 cr. hrs. 3 periods (3 lec.)
Historical and scientific background on the fire protection field. Includes the development and future of the field in America; governmental, industrial and private fire protection organizations and agencies; and employment and promotional opportunities.

Recommendation: Completion of FSC 149 prior to enrolling in this class or concurrent enrollment in FSC 149 and 150.

Offered: May not be offered this year, check class schedule.

FSC 152 Fundamentals of Fire Prevention
3 cr. hrs. 3 periods (3 lec.)
Introduction to the principles of fire prevention. Includes authority, responsibility and organization of fire prevention, inspection procedures and reports, fire hazard recognition, building construction, and occupancy classifications. Also includes site access and means of egress, water-based fire protection and water supply systems, portable extinguishers, special agent, extinguishing systems, and fire detection and alarm systems, plans review, hazardous materials and flammable and combustible liquids, and storage, handling, and use of other hazardous materials.

Prerequisite(s): FSC 149.

Offered: Spring.
FSC 153 Hazardous Materials
1.5 cr. hrs. 1.5 periods (1.5 lec.)
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.
Offered: Fall, Spring.

FSC 154 Advanced Fire Prevention
3 cr. hrs. 3 periods (3 lec.)
Introduction to high risk and industrial fire prevention. Includes code interpretation and application, research, implementing policy, testifying in legal proceedings, and creating forms and job aids. Also includes conducting field inspections and plans review, and building and fire code applications to simulated situations.
Prerequisite(s): FSC 152.
Information: Completion of this course will allow the student to test for Arizona State Certification as Inspector II.
Offered: May not be offered this year, check class schedule.

FSC 160 Wildland Firefighting
3 cr. hrs. 3 periods (3 lec.)
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.
Offered: Spring.

FSC 162 Hydraulics and Fire Suppression
3 cr. hrs. 3 periods (3 lec.)
Principles of hydraulics as applied to fire suppression. Includes physical laws affecting the movement of water through pipes, hydrants, pumpers, hoses, etc.; functions and limitations of mechanical equipment to overcome these restrictions; effect of friction loss; head and pressure; water system; fire flow requirements; and organization for fire suppression.
Prerequisite(s): FSC 149, 150, 151.
Offered: Fall.

FSC 163 Fire Apparatus and Equipment
3 cr. hrs. 3 periods (3 lec.)
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, 150, 151.
Offered: Spring.

FSC 164 Fire Protection Systems
3 cr. hrs. 3 periods (3 lec.)
Principles of fire protection systems. Includes portable and fixed fire extinguishing equipment, automatic sprinkler and deluge systems, rate of temperature rise and smoke detecting devices and alarm systems.
Prerequisite(s): FSC 152.
Offered: May not be offered this year, check class schedule.

FSC 165 Building Construction for Fire Protection
3 cr. hrs. 3 periods (3 lec.)
Principles of building design as related to fire protection. Includes fire travel, relation of fire load to propagation of flame, non-conforming structures and application of building codes.
Prerequisite(s): FSC 149, 150, 151.
Offered: Fall.

FSC 166 Fire Suppression, Strategy and Tactics
3 cr. hrs. 3 periods (3 lec.)
Principles of planning fire suppression attacks. Includes planning an attack to fit the problem and revising the plan of attack to meet changing situations. Prerequisites: FSC 165.
Offered: Spring.

FSC 167 Rescue Practices for the Fire Service
2.5 cr. hrs. 2.5 periods (2.5 lec.)
Introduction to skills necessary to assess, extricate, and care for victims in emergency situations. Includes an overview of fire service-based rescue, rescue operations and incident management, and civilian versus firefighter rescue. Also includes why firefighters become victims and an overview of technical rescues.
Prerequisite(s): FSC 149.
Offered: May not be offered this year, check class schedule.
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.
Offered: May not be offered this year, check class schedule.

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.
Information: FSC 170A, 170B, and 170C together constitute FSC 170.
Offered: May not be offered this year, check class schedule.

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.
Information: FSC 170A, 170B, and 170C together constitute FSC 170.
Offered: May not be offered this year, check class schedule.

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.
Information: FSC 170A, 170B, and 170C together constitute FSC 170.
Offered: May not be offered this year, check class schedule.

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.
Information: FSC 170A, 170B, and 170C together constitute FSC 170.
Offered: May not be offered this year, check class schedule.

FSC 173 Records and Reports
.25-1 cr. hrs. .25-1 periods (.25-1 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.
Offered: Fall, Spring.

FSC 175 Intro to Fire Investigation: Origin and Recognition of Arson
3 cr. hrs. 3 periods (3 lec.)
Basic principles of arson investigation. Includes an introduction to fire investigation, laws, fire causes, determining point of origin, evidence, fire setters, case investigation and preparation, and courtroom demeanor and testimony.

Prerequisite(s): FSC 149, 150, 151, 165.
Offered: Spring.

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, 151.
Information: Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.
FSC 181 Firefighter Rescue
1 cr. hrs. 1 periods (1 lec.)
Designed to give the firefighter the skills necessary to remove themselves and fellow firefighters from dangerous situations. Includes the skills necessary to perform effectively as a Rapid Intervention Crew (RIC) team with the goal of locating and removing injured or trapped firefighters.
Offered: May not be offered this year, check class schedule.

FSC 185 Advanced Fire Investigation: Arson
3 cr. hrs. 3 periods (3 lec.)
Training in fire investigation. Includes private sector agencies and fire science and governmental agencies at state and local level, with or without police powers, who have direct responsibility for fire investigations.
Prerequisite(s): FSC 175.
Offered: May not be offered this year, check class schedule.

FSC 189 Current Issues in Fire Science
2 cr. hrs. 2 periods (2 lec.)
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.
Prerequisite(s): WRT 101, 102.
Information: Completion of twenty credits in FSC prefix courses is required before enrolling in this course.
Offered: Fall.

FSC 260 Fire and Emergency Services Instructor I
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.
Information: Meets the requirements for the Arizona State Fire Marshal Instructor I certification and NFPA 1041.
Offered: May not be offered this year, check class schedule.

FSC 261 Fire and Emergency Services Instructor II
2 cr. hrs. 2 periods (2 lec.)
Continuation of FSC 260. Theoretical and practical training in developing, instructing and managing fire and emergency services training programs. Also includes an exploration of the design and development of training programs, performing needs and task analyses, development and utilization of lesson plans, the recruitment, selection and evaluation of instructors, and training manager's responsibilities relating to budget and resource management.
Prerequisite(s): FSC 260.
Information: Consent of instructor is required to enroll in this course concurrently with FSC 260.
Information: Meets the requirements for the Arizona State Fire Marshal Instructor II certification and NFPA 1041.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.
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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

FSC 275 Leadership VI for Fire Service Executives
1 cr. hrs. 1 periods (1 lec.)
Continuation of FSC 274. Includes master planning, facilities, and human resource planning. Also includes financial planning, strategic planning, implementation planning, and leadership skills in planning for the future.
Prerequisite(s): FSC 274.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

Fitness and Sport Sciences
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring.

FSS 208 Professional Activities: Aerobics and Group Fitness
2 cr. hrs. 3 periods (1 lec., 2 lab)
Aerobics skills and teaching methods for the Fitness and Sport Sciences major. Includes introduction to components of aerobic fitness, teaching an aerobic class, choreography basics, and strength training. Also includes group related fitness activities, specific populations and health concerns, and legal and professional responsibilities.
Prerequisite(s): FSS 234 or concurrent enrollment, and WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Recommendation: FSS 208 and 277 taken concurrently is highly recommended.
Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate.
Offered: Spring.

FSS 218 Professional Activities: Weight Training
2 cr. hrs. 3 periods (1 lec., 2 lab)
Introduction to the basic resistance training principles. Includes history, anatomy and physiology, biomechanics, weight training principles and concepts, program development and assessment, and programming.
Prerequisite(s): FSS 234 or concurrent enrollment, and WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Recommendation: FSS 218 and 276 taken concurrently is highly recommended.
Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate.
Offered: Fall.
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 structure and function of human anatomy and physiology of the skeletal support system, muscular system, nervous system, endocrine system, cardiovascular system, respiratory system, biomechanics, and metabolism. Prerequisites: REA 091 or placement into REA 112 on the reading assessment, and WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Information: This course will count toward the required courses in the Fitness Professional and Coaching certificates. Students intending to transfer into a four-year program or university are advised to seek further information regarding transferability. Fitness Professional students are expected to enroll in this course prior to, or concurrently with, other core courses in the program, specifically FSS 276 and/or FSS 218 (Fall) or FSS 277 and/or FSS 208 (Spring).
Offered: Fall, Spring.

FSS 236 Communication and Exercise Adherence
2 cr. hrs. 2 periods (2 lec.)
Communication skills and interviewing techniques for personal trainers. Includes theories of motivation, the trans-theoretical model and stages of change, and communication techniques.
Prerequisite(s): WRT 100 or 106 or satisfactory score on the writing assessment test.
Information: This course is intended for the Fitness Professional program and continuing education for fitness professionals, coaches, and physical education teachers.
Offered: Fall.

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.
Prerequisite(s): WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Offered: Fall, Spring, Summer.

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 optimal nutrition, energy expenditure, body composition assessment, regulating the body through exercise, and recent research findings.
Prerequisite(s): MAT 086, REA 091, and WRT 100 or 106, or satisfactory score on the Mathematics, Reading and Writing assessment tests.
Information: This course is intended for the Fitness Professional and professional development for coaches.
Offered: Fall, Spring, Summer.

FSS 260 Business Practices for the Personal Trainer
3 cr. hrs. 3 periods (3 lec.)
Practices associated with creating and managing a personal training business. Includes how to develop a business plan, marketing services, and legal and professional responsibilities.
Information: To be successful in this course, the student should have basic writing skills equivalent to the completion of WRT 100 or 106.
Information: This course is intended for the Fitness Professional program and continuing education for fitness professionals, coaches, and physical education teachers.
Offered: Spring.

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, 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.
Offered: May not be offered this year, check class schedule.

FSS 270 Advanced Principles for Athletic Conditioning
1 cr. hrs. 1.5 periods (.5 lec., 1 lab)
Advanced theory and application of training principles for athletes. Includes safety and personal health issues, strength and conditioning principles, testing and evaluation, exercise techniques, and program design.
Prerequisite(s): FSS 218, 234, 276, WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Information: This course requires physical activity. This course is intended for the Fitness Professions Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.
Offered: Spring.
FSS 271 Sport Psychology
3 cr. hrs. 3 periods (3 lec.)
Development of the basics of sport psychology. Includes psychological perspective, psychology skills for coaches, psychological skills for athletes, and implementing skills training.

Prerequisite(s): WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Information: This course is intended for the Coaching Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.
Offered: Fall, Spring.

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: To be successful in this course, the student should have basic writing skills equivalent to the completion of WRT 100 or 106.
Offered: Fall, Spring.

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, designing training programs, and producing peak performance.

Prerequisite(s): WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Information: This course is intended for the Coaching Certificate program and continuing education for fitness professionals, coaches, and physical education teachers.
Offered: Spring.

FSS 276 Personal Trainer: Muscular Strength, Endurance, Flexibility
3 cr. hrs. 4 periods (2 lec., 2 lab)
Assessment and interpretation of results for individualized programs designed for muscular strength, endurance and flexibility. Includes pre-activity screening, assessment, interpretation of results, manipulation of variables in program design, and periodization.

Prerequisite(s): FSS 234 or concurrent enrollment, REA 091 or placement into REA 112 on the reading assessment, and WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Recommendation: FSS 218 and 276 taken concurrently is highly recommended.
Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate.
Offered: Fall.

FSS 277 Personal Trainer: Cardiovascular Endurance/Body Composition
3 cr. hrs. 4 periods (2 lec., 2 lab)
Assessment and interpretation of testing results for individualized program design for cardiovascular training, and the skill development of body composition assessment techniques. Includes assessment issues, development of Specific/Measurable/Action-Oriented/Realistic/Time Bound (SMART) goals, program development, and special considerations.

Prerequisite(s): FSS 234 or concurrent enrollment, REA 091 or placement into REA 112 on the reading assessment, and WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Recommendation: FSS 208 and 277 taken concurrently is highly recommended.
Information: This course requires physical activity and is intended for students pursuing the Fitness Professional Certificate.
Offered: Spring.

FSS 279 Motor Development
2 cr. hrs. 2 periods (2 lec.)
Examination of development changes in motor patterns for children and adults. Includes introduction to motor development, prenatal development concerns, growth and maturation, infant reflexes and stereotypes, voluntary movements in infancy, perceptual-motor development, movement and changing sense of vision, cognitive and motor development and fine motor development. Also includes effects of early stimulation, social and motor development, psychological changes, motor assessment, and planning and conducting a motor development program.

Prerequisite(s): FSS 243/243A/243B or concurrent enrollment.
Information: To be successful in this course, the student should have basic writing skills equivalent to the completion of WRT 100 or 106.
Offered: May not be offered this year, check class schedule.
FSS 280 Lifestyle and Weight Management Consultant
1 cr. hrs. 1 periods (1 lec.)
Emphasis on evaluating fad diets, educating clients on proven techniques for weight loss (diet and exercise), and supporting clients with specific activities at various stages of change. Includes the trans-theoretical model, basic nutritional guidelines, exercise/activity guidelines and safety precautions, and developing personal strategies.
Prerequisite(s): FSS 236 or concurrent enrollment.
Information: This course is intended for the Fitness Professional program and continuing education for fitness professionals, coaches, and physical education teachers.
Information: Students must complete a Nutrition course at the 100 level or higher prior to, or concurrently with this course.
Offered: Fall.

FSS 281 Personal Trainer Exam Preparation
1 cr. hrs. 1 periods (1 lec.)
Summation of the curriculum presented in the Fitness Professional Certificate program. Includes exam content areas, study strategies, and test taking strategies to prepare for a nationally recognized certificate examination for personal trainers.
Prerequisite(s): Successful completion of or current enrollment in FSS 208, 218, 234, 276, and 277.
Information: Prerequisites may be waived with consent of instructor.
Offered: Fall, Spring.

FSS 285 Principles of Athletic Coaching
3 cr. hrs. 3 periods (3 lec.)
Introduction to the principles of athletic coaching. Includes principles of behavior, teaching, physical training, and management. Prerequisites: WRT 100 or 106 or placement into WRT 101 on the writing assessment.
Offered: Spring.

FSS 291 Fitness and Sports Sciences Internship
3 cr. hrs. 11 periods (1 lec., 10 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, progress review, 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, 236, 276, and 277.
Information: May be taken concurrently with program elective and/or FSS 281. Designed for students in their final semester of course work in the Fitness Professional Certificate program. This course requires approximately 150 hours of supervised internship time at two or more facilities, averaging 10 hours per week for a traditional 16 semester and is adjusted accordingly for more accelerated time periods.
Offered: Fall, Spring.

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 faculty member.
Information: May be taken two times for a maximum of eight credit hours. Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring, Summer.

FSS 299 Introduction to Co-op: Fitness Professional
1 cr. hrs. 1 periods (1 lec.)
Introduction to Cooperative Education 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, 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.
Information: This course is intended for the Fitness Professional program and may be taken in the 2nd semester or completion of FSS 276 or 277 before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.
Fitness and Wellness

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

FAW 103 Lifeguarding
1 cr. hrs. 2 periods (2 lab)
Introduction to the profession of lifeguarding. Includes essential water and personal safety, life saving strokes and procedures, rescues and escapes, injury management, surveillance techniques, and preventative safety strategies.

Information: Students must possess a current American Red Cross (ARC) Certification in Basic First Aid and CPR for the Professional Rescuer before enrolling in this course and must complete an American Red Cross swimming proficiency pre-test.

Information: This course follows the American Red Cross Life Guarding curriculum and successful completion leads to a three (3) year ARC certification.

Information: A program fee may be required to cover ARC certification records.

Information: May be taken three times for a maximum of three credit hours.

Offered: Fall, Spring.

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, designing an individualized program, programmatic instruction and conditioning, and reassessment and goal setting.

Information: This course is intended for individuals who are preparing for a job related physical fitness test or who have physically demanding jobs.

Information: May be taken three times for a maximum of three credit hours.

Offered: May not be offered this year, check class schedule.

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, relationship of sport to health related fitness components, designing an individualized program, programmatic instruction and conditioning, and reassessment and goal setting. Also includes focus on the development of agility, balance, coordination, power, reaction time, and speed in sports or activities requiring these skills.

Information: May be taken three times for a maximum of three credit hours.

Information: This course is intended for individuals who have been participating in regular conditioning or sport activities.

Offered: Fall, Spring.

FAW 106F1 Individual Fitness: Bicycling
1 cr. hrs. 2 periods (2 lab)
Cardiovascular conditioning, improved fitness, and weight management through various cycling workouts. Includes an introduction to cycling, components of training, heart rate zone training, bike preparation and terminology, cycling health and personal safety, designing your training program, and pacing and group riding skills. Also includes cycling techniques, cardiovascular fitness assessment, goal setting, and workout types for specific goals and distances.

Information: May be taken three times for a maximum of three credit hours.

Information: All rides will be on roadways and riders must have their own bicycles; however, road or racing bicycles are not required.

Information: Helmets are required.

Offered: May not be offered this year, check class schedule.

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, components of training, heart rate zone training, the distances, running health and safety, and designing your training program. Also includes stride technique, proper alignment, cardiovascular fitness assessment, goal setting, and workout types for specific goals and distances.

Information: May be taken three times for a maximum of three credit hours.

Information: This course is suitable for students who wish to run a few miles a week to those training for distances up to a marathon.

Offered: Fall, Spring.

FAW 106F3 Individual Fitness: Swimming
1 cr. hrs. 2 periods (2 lab)
Cardiovascular conditioning through lap swimming. Includes basic stroke review, techniques of endurance swimming, and assessment and improvement of cardiovascular fitness level.

Information: May be taken three times for a maximum of three credit hours.

Information: This course is not suitable for students with a fear of water or who do not have some initial swimming skill (novices).

Offered: Fall, Spring.
FITNESS AND WELLNESS

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, components of training, heart rate zone training, common faults, walking health and personal safety, designing your training program, and race walking techniques. Also includes stride technique, proper alignment, cardiovascular fitness assessment, goal setting, and workout types for specific goals and distances.
Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

FAW 108 Senior Fitness
1 cr. hrs. 2 periods (2 lab)
Introduction to a personalized fitness program using resistance, cardiovascular, and flexibility training for older adults. Includes orientation to the fitness facility, evaluation of personal fitness status and needs, principles of basic program design, and benefits of healthy lifestyle choices. Also includes choosing appropriate exercises to meet individual goals, and developing initial training strategies for improving body total fitness.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is appropriate for healthy older adults who have a desire to maintain or increase their activity levels.
Offered: Fall, Spring.

FAW 109 Triathlon Training: Swimming
1 cr. hrs. 2 periods (2 lab)
Cardiovascular conditioning for triathlon, biathlon, and distance swimming events. Includes essential personal safety and equipment, basic stroke development review, endurance swimming techniques, improving cardiovascular fitness level and event management.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for students interested in competitive distance swimming.
Offered: Fall, Spring, Summer.

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, evaluation of personal fitness status and goal setting, principles of basic program design, and benefits of healthy lifestyle choices.
Information: May be taken three times for a maximum of three credit hours.
Information: 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.
Offered: Fall, Spring, Summer.

FAW 110F2 Weight Training and Cardiovascular Fitness Level I Extended
2 cr. hrs. 4 periods (4 lab)
Introduction to a personalized fitness program using resistance, cardiovascular, and flexibility training. Includes orientation to the fitness facility, evaluation of personal fitness status and goal setting, principles of basic program design, and benefits of healthy lifestyle choices.
Information: May be taken two times for a maximum of four credit hours.
Information: 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.
Information: This course requires twice the time commitment for working out as FAW 110F1.
Offered: Fall, Spring, Summer.

FAW 110F3 Weight Training and Cardiovascular Fitness Level II
2 cr. hrs. 4 periods (4 lab)
Continuation of FAW 110F1 or FAW 110F2. Includes orientation to the fitness facility, evaluation of personal fitness status and needs, principles of program design, and benefits of healthy lifestyle choices.
Prerequisite(s): FAW 110F1 or 110F2.
Information: May be taken two times for a maximum of four credit hours.
Information: 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.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring, Summer.
FAW 112F1 Ballroom/Latin Dance I
1 cr. hrs. 2 periods (2 lab)
Introduction to ballroom and Latin dancing with emphasis on basic steps, turns, and varied techniques of traditional dances. Includes key components of each dance, floorwork/locomotor skills, dancing as a total activity, and evaluation.
Information: May be taken three times for a maximum of three credit hours.
Information: Traditional ballroom dances covered are the six majors: Foxtrot, Waltz, East Coast Swing, Tango, Cha Cha, and Rumba.
Information: Other popular social dances that may be covered are the Salsa/Mambo, Night Club Two Step, and West Coast Swing.
Information: This course is intended for recreational ballroom dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Offered: Fall, Spring, Summer.

FAW 112F2 Ballroom/Latin Dance II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 112F1. Includes key components of each dance, floorwork/locomotor skills, dancing as a total activity, and evaluation. Also includes emphasis on combinations, smooth transitions, and complex rhythmic patterns for the six major Ballroom dances.
Prerequisite(s): FAW 112F1.
Information: Other popular social dances that may be covered are the Salsa/Mambo, Night Club Two Step, and West Coast Swing.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for recreational ballroom dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.

FAW 113F1 Belly Dance I
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 and dancing as a total activity. Also includes history of belly dance; dance terminology; developing stamina, strength, balance, flexibility, endurance, and coordination; organizing dancing patterns into complete routines; and learning to improvise.
Information: This course is intended for recreational belly dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

FAW 113F2 Belly Dance II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 113F1. Includes key components of each dance, class protocol, dancing as a total activity and evaluation.
Prerequisite(s): FAW 113F1.
Information: May be taken three times for a maximum of three credit hours.
Information: Prerequisite(s) may be waived with consent of instructor.
Information: This course is for those experienced in Belly Dance.
Offered: Fall, Spring, Summer.

FAW 114 Country Western Dance
1 cr. hrs. 2 periods (2 lab)
Introduction to Country Western dancing with emphasis on dance terminology, rhythms, styles, essential steps and combinations. Includes key components of Country Western dance, floorwork/locomotor skills, dancing as a total activity, and evaluation. Also includes developing stamina, strength, balance, coordination, and organizing dancing patterns into complete routines.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for recreational Country Western dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Offered: May not be offered this year, check class schedule.

FAW 123F1 Salsa/Latin Dance I
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/locomotor skills, dancing as a total activity, and evaluation. Also includes history of salsa, dance terminology, developing stamina, strength and balance, organizing dancing patterns into complete routines, and learning to improvise.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for recreational Salsa dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Offered: Fall, Spring.
FAW 123F2 Salsa/Latin Dance II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 123F1. Salsa and other Latin dances for the more experienced dancer with emphasis on combinations, smooth transitions, and complex rhythmic patterns of salsa dance. Includes key components of each dance, floorwork/locomotor skills, dancing as a total activity, and evaluation. Also includes organizing dancing patterns in choreographies, improvisation, development of personal style, harmonizing movements with a partner, and increasing confidence for dancing in public.

Prerequisite(s): FAW 123F2.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for recreational Salsa dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: May not be offered this year, check class schedule.

FAW 126 West Coast Swing
1 cr. hrs. 2 periods (2 lab)
Introduction to West Coast Swing dancing with emphasis on dance terminology, rhythms, styles, essential steps and combinations. Includes key components of West Coast Swing, floorwork/locomotor skills, dancing as a total activity, and evaluation. Also includes developing stamina, strength, balance, coordination, and organizing dancing patterns into complete routines.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for recreational West Coast Swing dance and will not be accepted for the Associate of Fine Arts Dance Concentration.
Offered: May not be offered this year, check class schedule.

FAW 128F1 Aerobics
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, and elements of rhythmic aerobic routines. Also includes determination of cardiovascular endurance level and challenging that system, improving local muscular endurance, and flexibility.

Information: May be taken three times for a maximum of three credit hours.
Offered: Summer.

FAW 128F2 Aerobics: Aqua Fitness
1 cr. hrs. 2 periods (2 lab)
Improved cardiovascular and muscular strength, endurance and flexibility through non-impact movement in shallow and deep water. Includes essential water and personal safety, movement in the water, and assessing fitness. Also includes utilizing water resistance to improve current fitness level and joint range of motion while minimizing stress to the joint.

Information: May be taken three times for a maximum of three credit hours.
Offered: May not be offered this year, check class schedule.

FAW 128F3 Aerobics: 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, elements of rhythmic aerobic routines, and elements of interval training.

Information: May be taken three times for a maximum of three credit hours.
Information: This course will utilize a variety of aerobic modalities which may include floor exercise, steps, and interval training.
Offered: Fall, Spring.

FAW 128F4 Aerobics: Cardio-Kickboxing
1 cr. hrs. 2 periods (2 lab)
Cardiovascular and muscular exercises generally set to music, performed rhythmically, and patterns simulate the movements of kickboxing (upper and lower bodystrikes) without physical contact. Includes personal safety and preparation, personal fitness assessment and activity modifications, and elements of rhythmic aerobic routines.

Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

FAW 128F5 Aerobics: Plus-Sized Exercise
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, and elements of rhythmic aerobic routines. Also includes determination of cardiovascular endurance level and challenging that system, improving local muscular endurance, flexibility, and techniques for warming up and cooling down safely.

Information: May be taken three times for a maximum of three credit hours.
Information: This low-impact, personally modified course is intended for students who are overweight and who do not consider themselves ready for a traditional aerobics-style course.
Offered: Fall, Spring.
FAW 128F6 Aerobics: 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 aerobic routines. Also includes determination of cardiovascular endurance level and challenging that system, improving local muscular endurance, and flexibility.

Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

FAW 129F1 Aerobi-Dance: Jazz Fitness  
1 cr. hrs. 2 periods (2 lab)  
Cardiovascular and muscular strength conditioning set to music and incorporating jazz dance steps in choreographed group exercise. Includes personal safety and preparation, personal fitness assessment and activity modifications, and elements of rhythmic aerobic routines.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is an aerobics course using methods common to Jazz but it is not a Jazz dance course and will not be accepted for credit in the Associate of Fine Arts Dance Concentration.
Offered: Fall.

FAW 129F2 Aerobi-Dance: Tap Fitness  
1 cr. hrs. 2 periods (2 lab)  
Cardiovascular and muscular strength conditioning set to music and incorporating tap dance steps in choreographed group exercise. Includes personal safety and preparation, personal fitness assessment and activity modifications, and elements of rhythmic aerobic routines.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is an aerobics course using methods common to tap but it is not a Tap Dance course and will not be accepted for credit in the Associate of Fine Arts Dance Concentration.
Offered: May not be offered this year, check class schedule.

FAW 129F3 Aerobi-Dance: Latin Rhythms  
1 cr. hrs. 2 periods (2 lab)  
Cardiovascular and muscular exercises inspired by Latin dance and music. Includes personal safety and preparation, personal fitness assessment and activity modification, and elements of rhythmic aerobic routines.

Information: May be taken three times for a maximum of three credit hours.
Information: This course may include combinations from cumbia, merengue, salsa, reggaeton, mambo, rumba, flamenco, calypso, or Salsaton.
Information: Music selections include both fast and slow rhythms to help tone and sculpt the body.
Offered: Fall, Spring, Summer.

FAW 130 Boot Camp Style Circuit Training  
1 cr. hrs. 2 periods (2 lab)  
Total body conditioning using various exercises, stations, and equipment which provide a cardiovascular challenge while emphasizing development of muscular strength and endurance. Includes personal safety and preparation, personal fitness assessment and activity modifications, and techniques and considerations for exercise. Also includes work on flexibility, agility, balance, and coordination with emphasis on personal fitness development.

Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring, Summer.

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. Also includes determination of cardiovascular endurance level and challenging that system, improving local muscular endurance, and flexibility.

Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring, Summer.

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 three times for a maximum of three credit hours.
Information: Students are expected to provide their own bag gloves or hand wraps for contact with the bags and pads.
Information: Music may be used for motivation during the course but this is not a choreographed class.
Offered: Fall, Spring, Summer.
FAW 134F1 Pilates I
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 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.
Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring, Summer.

FAW 134F2 Pilates II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 134F1. Includes key components of Pilates, six core/essential principles of Pilates exercises, integrative practice, and personalizing one’s practice.
Prerequisite(s): FAW 134F1.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for students who have established a practice of the basic Pilates exercises, does not use reformers, and is primarily mat based.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: May not be offered this year, check class schedule.

FAW 136 Stretch and Tone
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, personal fitness assessment and activity modifications, and techniques and considerations for exercise.
Information: May be taken three times for a maximum of three credit hours.
Information: This course includes some cardiovascular challenge but primary emphasis is on local muscular development (strength and flexibility) and assessment of personal fitness.
Offered: Fall, Spring, Summer.

FAW 138F1 Yoga I
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, and personalizing one's practice.
Information: May be taken three times for a maximum of three hours.
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.
Offered: Fall, Spring, Summer.

FAW 138F2 Yoga II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 138F1. Includes key components of yoga, essential and complex movements and postures, mind-body practice, and personalizing one’s practice.
Prerequisite(s): FAW 138F1.
Information: May be taken three times for a maximum of three credit hours.
Information: This course is designed for students who have begun to establish a personal home practice and involves a deepening of the foundations established in Yoga I with more challenging postures, breathing techniques, length of sequences of skills, meditation, and philosophy.
Information: There are many styles of yoga and the specific philosophy offered in a given section will reflect that of the instructor and may differ slightly from other Yoga II instructors.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.

FAW 138F3 Yoga off the Mat
1 cr. hrs. 2 periods (2 lab)
Development of an individual yoga practice appropriate for individuals in the workplace, and/or for those with limited mobility, without using floor mats, to optimize performance, manage stress and increase health and well being. Includes key components of Yoga, adapting essential movements and postures, mind-body practice, and personalizing one's practice.
Information: May be taken three times for a maximum of three credit hours.
Information: This course will be taught in a traditional classroom setting to simulate the workplace environment.
Information: Students may participate in street clothes.
Information: Postures may include sitting or standing as physical abilities allow.
Offered: May not be offered this year, check class schedule.
FAW 148F1 Golf I
1 cr. hrs. 2 periods (2 lab)
Fundamentals of golf intended for the novice or player with limited experience. Includes emphasis on grips, stance, swing, shot selection, putting, rules, and etiquette of the game. Also includes key components of each shot, essentials for game play, and game management.

Information: May be taken three times for a maximum of three credit hours.
Information: A required range and/or course fee will be payable to the golf course.
Offered: Fall, Spring, Summer.

FAW 148F2 Golf II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 148F1. Includes review of the fundamentals, key components of each shot, essentials for game play, and game management.

Prerequisite(s): FAW 148F1.

Information: May be taken three times for a maximum of three credit hours.
Information: A required range and/or course fee will be payable to the golf course.
Information: This course is intended for golfers with some experience or who play regularly and wish to refine physical skills and mental strategies to improve performance.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall, Spring.

FAW 151 Pickle-Ball
1 cr. hrs. 2 periods (2 lab)
Fundamentals of Pickle-Ball, a shortened court variation of tennis and badminton played with paddles. Includes key components of Pickle-Ball, fundamental stroke development, and game management.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for skill development and recreational play and is similar to, but requires less court coverage than, tennis.
Offered: May not be offered this year, check class schedule.

FAW 152 Racquetball
1 cr. hrs. 2 periods (2 lab)
Fundamentals of racquetball with emphasis on grips, stance, swing, serving, shot selection, court position, and etiquette. Includes key components of racquetball, fundamental stroke development, and game management.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for skill development and recreational play.
Information: Students must supply their own racquets and safety glasses.
Offered: May not be offered this year, check class schedule.

FAW 155F1 Tennis I
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, and game management.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for skill development and recreational play.
Offered: Fall, Spring.

FAW 155F2 Tennis II
1 cr. hrs. 2 periods (2 lab)
Continuation of FAW 155F1. Includes review of the key components of tennis, fundamental strokes, shot variations, and game management.

Prerequisite(s): FAW 155F1.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for players with some playing experience who wish to refine physical skills and mental strategies to improve performance.
Information: Recreational competitive play with more emphasis on game strategy is stressed.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Spring.

FAW 156 Wrestling
1 cr. hrs. 2 periods (2 lab)
Introduction to Folk, Free-Style, and Greco-Roman wrestling. Includes key components of wrestling, match strategies, and conditioning, safety, and hygiene.

Information: May be taken three times for a maximum of three credit hours.
Information: This course is intended for students with varying degrees of experience in wrestling and a desire to improve their own knowledge and skill in the sport.
Information: Emphasis on development of fundamental offensive and defensive combative skills in drills and match-like situations.
Offered: May not be offered this year, check class schedule.
FAW 157F1 Aikido I  
1 cr. hrs. 2 periods (2 lab)  
Introduction to the fundamentals of Aikido. Includes key components of Aikido, physical and mental preparation, ukemi and basic stances, neutralizing attacks, and budo implements.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Fall, Spring.

FAW 157F2 Aikido II  
1 cr. hrs. 2 periods (2 lab)  
Continuation of FAW 157F1. Includes key components of Aikido, physical and mental preparation, ukemi and basic stances, neutralizing attacks, and budo implements.  
Prerequisite(s): FAW 157F1.  
Information: May be taken three times for a maximum of three credit hours. Prerequisite(s) may be waived with consent of instructor.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: Fall, Spring.

FAW 164F1 Tae Kwon Do I  
1 cr. hrs. 2 periods (2 lab)  
Introduction to the fundamentals of Tae Kwon Do. Includes essentials of Tae Kwon Do, personal preparation, and self defense techniques against an opponent.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Fall, Spring.

FAW 164F2 Tae Kwon Do II  
1 cr. hrs. 2 periods (2 lab)  
Continuation of FAW 164F1. Includes essentials of Tae Kwon Do, personal preparation, self defense techniques against an opponent, and application of advanced skills.  
Prerequisite(s): FAW 164F1.  
Information: May be taken three times for a maximum of three credit hours. Information: Prerequisite(s) may be waived with consent of instructor.  
Offered: Fall, Spring.

FAW 165 T’ai-chi Chuan  
1 cr. hrs. 2 periods (2 lab)  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Fall, Spring, Summer.

FAW 167 Baseball  
1 cr. hrs. 2 periods (2 lab)  
Fundamental baseball skills for the recreational player. Includes key components of baseball, individual skills, and team skills.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Summer.

FAW 168 Basketball  
1 cr. hrs. 2 periods (2 lab)  
Fundamental basketball skills for the recreational player. Includes key components of basketball, individual skills, and team skills.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Fall, Spring.

FAW 170 Soccer  
1 cr. hrs. 2 periods (2 lab)  
Fundamental soccer skills for the recreational player. Includes key components of soccer, individual skills, and team skills.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Spring.
FAW 171F1 Softball: Fast Pitch
1 cr. hrs. 2 periods (2 lab)
Fundamental fast pitch softball skills for the recreational player. Includes key components of fast pitch softball, individual skills, and team skills.
Information: May be taken three times for a maximum of three credit hours.
Information: Students must supply their own gloves.
Offered: May not be offered this year, check class schedule.

FAW 171F2 Softball: Slow Pitch
1 cr. hrs. 2 periods (2 lab)
Fundamental slow pitch softball skills for the recreational player. Includes key components of slow pitch softball, individual skills, and team skills.
Information: May be taken three times for a maximum of three credit hours.
Information: Students must supply their own gloves.
Offered: May not be offered this year, check class schedule.

FAW 173 Volleyball
1 cr. hrs. 2 periods (2 lab)
Fundamental volleyball skills for the recreational player. Includes offensive and defensive systems and strategies, conditioning, and game play.
Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

FAW 180 Weight Management Strategies
1 cr. hrs. 1 periods (1 lec.)
Current research, information, and support to make lifestyle changes to manage weight and improve overall wellness. Includes personal assessment, stages of change, basic nutritional guidelines, exercise/activity guidelines and safety precautions, and developing personal strategies.
Information: May be taken three times for a maximum of three credit hours.
Offered: Fall, Spring.

Food Science and Nutrition
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Information: Same as BIO 127IN.
Offered: Fall, Spring, Summer.

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.
Information: Same as SSE 154.
Offered: Fall, Spring, Summer.

Foundations for Personal Change
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

FPC 107 Teamwork
1 cr. hrs. 1 periods (1 lec.)
Development of teamwork proficiency appropriate to career objectives. Includes teamwork on the job, essentials for teamwork success, and skill development in context. Also includes a focus on task and relationship skills in a workplace context.
Information: May be taken four times for a maximum of four credit hours.
Offered: May not be offered this year, check class schedule.
FRENCH — GAME DESIGN

French

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

FRE 050 Social and Cultural French: Food Traditions and Dining
2 cr. hrs. 2 periods (2 lec.)
Introduction to the French language presented in the context of food traditions and dining. Includes food in the culture of France, language of groceries and ingredients, and conversation for dining.
Offered: May not be offered this year, check class schedule.

FRE 101 Elementary French I SUN# FRE 1101
4 cr. hrs. 4 periods (4 lec.)
Introduction to the French language. Includes developing proficiency in pronunciation, communication, basic grammar, and introduction to French culture.
Offered: Fall, Spring.

FRE 102 Elementary French II SUN# FRE 1102
4 cr. hrs. 4 periods (4 lec.)
Continuation of FRE 101. Includes increased proficiency in pronunciation, communication, and basic grammar. Also includes French cultural traditions.
Prerequisite(s): FRE 101.
Offered: Fall, Spring.

FRE 106 Beginning Conversation
3 cr. hrs. 3 periods (3 lec.)
Introduction to conversational French. Includes basic oral and written forms, simple grammatical structures for oral and written communication, simple interpersonal communicative interaction, various interpersonal transactions, and cultural perspectives. Also includes reading, writing, speaking, and listening with emphasis on communication.
Offered: May not be offered this year, check class schedule.

FRE 201 Intermediate French I SUN# FRE 2201
4 cr. hrs. 4 periods (4 lec.)
Continuation of FRE 102. Includes an intensive review of pronunciation, communication, and advanced grammar. Also includes French cultural traditions.
Prerequisite(s): FRE 102.
Information: Prerequisite(s) may be waived with two years of high school French.
Information: This course will be conducted primarily in French.
Offered: Fall, Spring.

FRE 202 Intermediate French II SUN# FRE 2202
4 cr. hrs. 4 periods (4 lec.)
Continuation of FRE 201. Includes an intensive review of pronunciation, communication, and advanced grammar. Also includes French cultural traditions.
Prerequisite(s): FRE 201.
Information: This course will be conducted primarily in French.
Offered: Fall, Spring.

FRE 296 Independent Study in French
1-4 cr. hrs. 3-12 periods (3-12 lab)
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.
Information: May be taken two times for a maximum of eight credit hours.
Offered: Fall.

Game Design

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 games on culture, psychological impact of games, and working in the game industry.
Offered: Fall.
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.  
Offered: Fall, Spring.

GAM 120 Introduction to Game Programming  
4 cr. hrs. 4 periods (4 lec.)  
Introduction to game engine programming. Includes Unity 3D game engine, JavaScript language features, input interaction, object-oriented JavaScript features, image maps, particle engine, and artificial intelligence techniques.  
Prerequisite(s): DAR 252 and GAM 101 and either MAT 145 (preferred) or MAT 142 or MAT 144 or MAT 151 or higher.
Offered: Spring.

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 storyboarding.  
Prerequisite(s): GAM 102, 120.  
Offered: Fall.

GAM 214 Digital Arts Business and Portfolio  
2 cr. hrs. 3 periods (1 lec., 2 lab)  
Business techniques for the digital arts industry. Includes designer/client relationship, fee structures for designer services, documenting time, portfolio development, and advertising and promotion.  
Prerequisite(s): DAR 103.  
Information: Same as DAR 214.  
Offered: Fall, Spring.

General Technical Writing  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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): WRT 070 or 075 with a C or better, or required score on the writing assessment test for WRT 100.  
Offered: Fall, Spring.

GTW 101A Writing for Trades and Technical Occupations: Module A  
1 cr. hrs. 1 periods (1 lec.)  
Module A constitutes approximately the first one-third of GTW 101.  
Prerequisite(s): WRT 070 or 075 with a C or better, or required score on the writing assessment test for WRT 100.  
Information: GTW 101A, 101B, and 101C together constitute GTW 101. A student may concurrently enroll in all three modules, but modules must be completed sequentially during the semester.  
Offered: Fall, Spring.

GTW 101B Writing for Trades and Technical Occupations: Module B  
1 cr. hrs. 1 periods (1 lec.)  
Module B constitutes approximately the second one-third of GTW 101.  
Prerequisite(s): GTW 101A with a grade of C or better, or concurrent enrollment in GTW 101A and/or 101C.  
Information: GTW 101A, 101B, and 101C together constitute GTW 101. A student may concurrently enroll in all three modules, but modules must be completed sequentially during the semester.  
Offered: Fall, Spring.

GTW 101C Writing for Trades and Technical Occupations: Module C  
1 cr. hrs. 1 periods (1 lec.)  
Module C constitutes approximately the third one-third of GTW 101.  
Prerequisite(s): GTW 101B with a grade of C or better, or concurrent enrollment in GTW 101A and/or 101B.  
Information: GTW 101A, 101B, and 101C together constitute GTW 101. A student may concurrently enroll in all three modules, but modules must be completed sequentially during the semester.  
Offered: Fall, Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Type</th>
<th>Prerequisites</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTM 105</td>
<td><strong>Applied Technical Mathematics</strong></td>
<td>3 cr.</td>
<td>3 lec.</td>
<td>Applied geometry and trigonometry operations. Includes review of basic math operations, review of pre-algebra, elements of geometry, plane trigonometry, and practical applications. <strong>Prerequisite(s):</strong> MAT 086 or required score on mathematics assessment test.</td>
<td>Fall, Spring.</td>
</tr>
<tr>
<td>GEO 101</td>
<td><strong>Physical Geography: Weather and Climate</strong></td>
<td>4 cr.</td>
<td>6 lec.</td>
<td>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.</td>
<td>Fall, Spring, Summer.</td>
</tr>
<tr>
<td>GEO 102</td>
<td><strong>Physical Geography: Land Forms and Oceans</strong></td>
<td>4 cr.</td>
<td>6 lec.</td>
<td>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.</td>
<td>Fall, Spring, Summer.</td>
</tr>
<tr>
<td>GEO 103</td>
<td><strong>Cultural Geography</strong></td>
<td>3 cr.</td>
<td>3 lec.</td>
<td>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.</td>
<td>Fall, Spring, Summer.</td>
</tr>
<tr>
<td>GEO 104</td>
<td><strong>World Regional Geography</strong></td>
<td>3 cr.</td>
<td>3 lec.</td>
<td>Geographic concepts and information organized by conventional regions and nations. Includes geographic perspectives, physical environment, regions and cultures, realms and population, and the regional framework.</td>
<td>Fall, Spring.</td>
</tr>
<tr>
<td>GEO 250</td>
<td><strong>Introduction to Medical Geography</strong></td>
<td>3 cr.</td>
<td>3 lec.</td>
<td>Introduction to the spatial aspects of health and disease. Includes disease mapping, etiology, statistical associations, health care inequities, and spatial distribution of health care facilities.</td>
<td>Fall, Spring.</td>
</tr>
<tr>
<td>GEO 265</td>
<td><strong>Mapping Concepts</strong></td>
<td>1 cr.</td>
<td>1 lec.</td>
<td>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. <strong>Information:</strong> Same as ANT/ARC/GIS 265.</td>
<td>May not be offered this year, check class schedule.</td>
</tr>
<tr>
<td>GEO 267</td>
<td><strong>Introduction to Geographic Information Systems</strong></td>
<td>3 cr.</td>
<td>5 lec.</td>
<td>Introduction to the technology of geographic information systems. Includes the evolution of technology, system components, database concepts, applications, and implementation. <strong>Prerequisite(s):</strong> ANT/ARC/GEO/GIS 265 or concurrent enrollment. <strong>Information:</strong> Basic computer skills are required before enrolling in this course. <strong>Information:</strong> Same as ANT/ARC/GIS 267.</td>
<td>May not be offered this year, check class schedule.</td>
</tr>
</tbody>
</table>
GEO 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, methods and techniques, and application projects.
Prerequisite(s): ANT/ARC/GEO/GIS 265 or concurrent enrollment and CSA 101.
Information: Same as ANT/ARC/GIS 284.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

Geology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

GLG 101IN Physical Geology SUN# GLG 1101
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.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

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

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

GLG 140IN Introduction to Oceanography
4 cr. hrs. 6 periods (3 lec., 3 lab)
Introduction to the study of oceans. Includes scientific measurements, lab techniques, and the scientific method, introduction to oceanography, geological, chemical, physical and biological oceanography, and the human presence in the ocean.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

GLG 221IN Structural Geology
4 cr. hrs. 8 periods (2 lec., 6 lab)
Study of structures from formation and deformation of rocks, of the forces causing such deformations, and the resulting geographic features. Includes field mapping techniques.
Prerequisite(s): GLG 101 and 101LB, or GLG 101IN.
Recommendation: Trigonometry is recommended before enrolling in this course.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: May not be offered this year, check class schedule.
GLG 236 Geologic Resources
3 cr. hrs. 3 periods (3 lec.)
Survey of geologic resources, with emphasis on fossil fuels, metals, nuclear energy, and water resources. Includes an overview of geologic resources, distinctions between renewable vs. non-renewable resources, reserves, metals, non-metallic commodities, energy resources, environmental and economic concerns, geopolitical and global economic effects, and the future of geologic resources.

Recommendation: Completion of GLG 101 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

GLG 240IN Geology of Selected Regions
3 cr. hrs. 5 periods (2 lec., 3 lab)
Geologic survey of a specific region. Includes the stratigraphy, structure, historical geology, an emphasis on contemporary geologic processes, and aspects of resource usage by human occupants. Also includes classroom research, laboratory activities, and field work which may involve multi-day field excursions.

Prerequisite(s): GLG 101IN.

Recommendation: Completion of GLG 102 or 102IN before enrolling in this course.
Information: Students will be required to participate in some hiking activities and should be in reasonably good physical condition if considering enrolling in this course.
Information: GLG 101 no longer offered but will meet prerequisite.
Offered: May not be offered this year, check class schedule.

GLG 240TB Geology of Selected Regions: Tucson Basin
2-3 cr. hrs. 2-3 periods (2-3 lec.)
Geologic survey of a specific region. Includes the stratigraphy, structure, historical geology and most important geological processes operating today. Also includes aspects of resource use by human occupants.

Prerequisite(s): GLG 201.

Recommendation: Completion of GLG 102 before enrolling in this course.
Information: May be taken four times for a maximum of twelve credit hours.
Offered: May not be offered this year, check class schedule.

GLG 244IN Geological Field Excursions
1-3 cr. hrs. .5-12 periods (.25-3 lec., .25-9 lab)
Field excursions providing encounters with geologic features and processes in a given geographic area. Includes focus on observing, recording and analyzing materials and processes of the selected region. May also include human-related developments associated with the geological environment.

Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Information: Consent of instructor is required before enrolling in this course.
Information: May likely involve overnight camping and possibly moderately strenuous hikes.
Information: May be taken four times for a maximum of twelve credits.
Offered: May not be offered this year, check class schedule.

GLG 280IN Geology of Arizona
3 cr. hrs. 5 periods (2 lec., 3 lab)
Overview of the stratigraphy and structural and geologic history of Arizona and adjacent areas.

Prerequisite(s): GLG 101IN and 102IN.

Information: Students will be required to participate in some hiking activities and should be in reasonably good physical condition if considering enrolling in this course.
Information: GLG 101 and 102 no longer offered but will meet prerequisite.
Offered: May not be offered this year, check class schedule.

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.
Information: May be taken three times for a maximum of nine credit hours.
Offered: May not be offered this year, check class schedule.
# Geospatial Information Studies

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

## 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.*

*Offered: Fall, Spring.*

## 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.*

*Offered: Fall.*

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

Introduction to the technology of geographic information systems (GIS). Includes the evolution of the technology, applications, benefits and costs, characteristics of geographic data, data types, database concepts, and operations and functionality. Also includes hardware, software, implementation, legal issues, and the future of geographic information systems.

*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/ARC/GEO 267.*

*Offered: Fall.*

## 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 static and RTK precision GPS, 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(s) may be waived with equivalent experience or consent of instructor. Same as ANT/ARC 281*

*Offered: Fall.*

## 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, methods and techniques, and application projects.

*Prerequisite(s):* ANT/ARC/GEO/GIS 265 or concurrent enrollment, and CSA 101.

*Information: Same as ANT/ARC/GEO 284.*

*Offered: May not be offered this year, check class schedule.*

## GIS 286 Electronic and Digital Field Mapping
4 cr. hrs. 8 periods (2 lec., 6 lab)

Overview of the creation of electronic and digital maps in a field setting. Includes introduction, 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.*

*Offered: Spring.*

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# German

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

## GER 101 Elementary German I  SUN# GER 1101
4 cr. hrs. 4 periods (4 lec.)

Introduction to the German language in developing proficiency in listening to, speaking, reading, and writing. Includes nouns and pronouns pronunciation, communication, basic grammar, and introduction to German culture.

*Offered: Fall, Spring.*
GER 102 Elementary German II  SUN# GER 1102
4 cr. hrs. 4 periods (4 lec.)
Continuation of GER 101. Includes increased proficiency in listening to, speaking, reading, and writing the German language. Also includes pronunciation, communication, intermediate grammar, and German cultural traditions.

**Prerequisite(s):** GER 101.
**Information:** One year of high school German may fulfill prerequisite.
**Offered:** Fall, Spring.

GER 201 Intermediate German I  SUN# GER 2201
4 cr. hrs. 4 periods (4 lec.)
Continuation of GER 102. Includes an intensive review of grammar, pronunciation, communication, advanced grammar, readings of selected authors, and German culture.

**Prerequisite(s):** GER 102.
**Information:** Two years of high school German may fulfill prerequisite.
**Offered:** Fall, Spring.

GER 202 Intermediate German II  SUN# GER 2202
4 cr. hrs. 4 periods (4 lec.)
Continuation of GER 201. Includes pronunciation, communication, advanced grammar, and German culture.

**Prerequisite(s):** GER 201.
**Offered:** Fall, Spring.

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.
**Information:** May be taken two times for a maximum of eight credit hours.
**Offered:** Fall, Spring.

Global Studies

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

GLS 109 Introduction to Global Studies
3 cr. hrs. 3 periods (3 lec.)
Survey of modern globalization. Includes the study of dimensions of globalization, global organizations, global politics, cultural globalization, the global economy, global environmental independence, and global social movements and counter movements. Also includes global interactions and their current effects on the restructuring of cultural, political, and economic institutions worldwide.

**Information:** Same as ANT 109 and SOC 109.
**Offered:** Fall, Spring

Health Care

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

HCA 102 Drug Calculations
1 cr. hrs. 1 periods (1 lec.)
Computation of medication dosage. Includes basic mathematics review, calculation of medications, interpretation of labels, alternate methods of administration, methods of medication calculations, and calculations related to route of administration and in specialty areas.

**Corequisite(s):** HCA 155, NRS 104.
**Offered:** Fall, Spring.

HCA 103 Orientation to Pharmacology
3 cr. hrs. 3 periods (3 lec.)
An overview of pharmacology for allied health professionals. Includes pharmacological principles and the chemical, generic, and trade names for drugs. Also includes drug measurement and calculations, prescription preparation, administration, and Federal and Arizona regulations.

**Offered:** May not be offered this year, check class schedule.
HCA 119 Orientation to Human Anatomy and Physiology
2 cr. hrs. 2 periods (2 lec.)
Orientation to basic anatomy and physiology appropriate for the health care setting. Includes the application of medical terminology for the health care environment.
Offered: May not be offered this year, check class schedule.

HCA 154 Introduction to Health Care Delivery
3 cr. hrs. 3 periods (3 lec.)
Overview of the health care field. Includes health care delivery systems, medical terminology, ethics and professionalism, patient rights and responsibilities; communication; basic patient assessment; and workplace and personal safety.
Offered: Fall.

HCA 155 Introduction to Pharmacology
3 cr. hrs. 3 periods (3 lec.)
Introduction to Pharmacology Application of the nursing process to actions, uses and effects of medications and intended for nursing students. Includes introduction to the study of pharmacology, the nursing process and fundamentals of medication therapy, pharmacokinetics and pharmacodynamics, and applying the nursing process for clients receiving various medications.
Corequisite(s): HCA 102, NRS 104, NRS 104LC, NRS 104LS, WRT 101.
Offered: Fall, Spring.

Health Continuing Education
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

HCE 200 Surgical Technologist Refresher
3 cr. hrs. 3 periods (3 lec.)
Preparation for the national Certified Surgical Technologist Exam. Includes anatomy and physiology, microbiology and wound healing, pharmacology, computer skills, electricity, robotics, surgical procedures, and perioperative patient care.
Information: Prior to enrolling in this course, students must be current or previously certified surgical technologists or uncertified graduates of a surgical technology program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or Accrediting Bureau of Health Education Schools (ABHES).
Offered: May not be offered this year, check class schedule.

HCE 249 Medication Delivery Regulations in Nursing
1 cr. hrs. 1 periods (1 lec.)
Overview of the Arizona state regulations impacting medication delivery in nursing. Includes interaction and roles of health care personnel, management and delegation, and advanced scope of practice. Also includes patient rights, and legal and ethical considerations.
Information: Corequisite for HCE 250 or HCE 253.
Offered: May not be offered this year, check class schedule.

HCE 250 Intravenous Medication Therapy for the LPN
3 cr. hrs. 3 periods (3 lec.)
Techniques for licensed personnel to start, maintain, and discontinue intravenous (IV) therapy, such as peripheral venipuncture and to administer IV therapy with selected premixed medications and solutions under the direction of a registered nurse. Includes anatomy and physiology for the LPN.
Corequisite(s): HCE 249.
Recommendation: Licensed Practical Nurse or consent of instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.

HCE 251 Initiating Intravenous Therapy
1 cr. hrs. 1 periods (1 lec.)
Theory and practice needed for the current LPN to start, maintain, and discontinue intravenous (IV) therapy (peripheral venipuncture) under the supervision of a registered nurse. Includes anatomy and physiology, sites for venipuncture, fluid replacement therapy, infusion equipment, intravenous solutions, flowrate of IV infusion, starting an IV infusion, nursing management of IV therapy, skills demonstration and practice, and clinical practice and certification.
Recommendation: Licensed Practical Nurse or consent of instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.
HCE 253 Intravenous Medication Therapy for the Registered Nurse
3 cr. hrs. 3 periods (3 lec.)
Techniques for the registered nurse to start, maintain, and discontinue intravenous (IV) therapy, such as peripheral venipuncture and to administer IV therapy. Includes principles of IV therapy, fluid balance in the body, local and systemic complications, therapy and patient care, medication delivery equipment, therapy monitoring and documentation, and skills demonstration. Also includes anatomy and physiology related to IV Therapy.
Information: Registered Nurse or consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

Health Education
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

HED 136 Introduction to Health Sciences
3 cr. hrs. 3 periods (3 lec.)
Contemporary health-related issues for all dimensions of the individual. Includes understanding health for ourselves and others, a lifetime of wellness, responsible sexuality, and avoiding harmful habits.
Offered: Spring.

HED 140 First Aid and Cardiopulmonary Resuscitation
1 cr. hrs. 1 periods (1 lec.)
Offered: Fall, Spring, Summer.

Health Information Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 in the U.S, public policy, professional roles, legal and regulatory issues, ancillary services, health record and payment systems including the Electronic Health Record (EHR) and computer systems. Also includes health reform initiatives in the U.S.
Offered: Fall, Spring, Summer.

HIT 101 Introduction to ICD-9 Coding
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to principles and application of the International Classification of Diseases (ICD) coding system and the Healthcare Common Procedure Coding System (HCPCS). Includes overview of coding and introduction to ICD 9th Revision Clinical Modifications (9-CM) and 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.
Prerequisite(s): HIT 105.
Recommendation: Completion of HIT 100 is recommended before enrolling in the course.
Offered: Fall, Spring, Summer.

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 is recommended before enrolling in this course.
Offered: Fall, Spring, Summer.

HIT 105 Medical Terminology
4 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.
**HIT 110 Medical Billing and Insurance I**  
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, 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):* OAP 162.  
Offered: Fall, Spring, Summer.  

**HIT 111 Medical Billing and Insurance II**  
3 cr. hrs. 3 periods (3 lec.)  
Continuation of HIT 110. Includes managed care systems, eligibility for managed care systems, Medicare requirements, Medicaid programs or Arizona Health Care Cost Containment System (AHCCCS), TRICARE and CHAMPA, workers’ compensation, disability insurance, procedural and diagnostic coding, billing software, and hospital billing.  
*Prerequisite(s):* HIT 110.  
Offered: Fall, Spring, Summer.  

**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, diagnostic and procedural coding (with emphasis on medical terminology, anatomy and physiology), client eligibility and reimbursement processes, health care statistics, and supervision and management.  
*Recommendation:* Completion of HIT 100 and 105 are recommended before enrolling in the course.  
Offered: Fall, Spring.  

**HIT 120 Pharmacology for Health Information Technology**  
2 cr. hrs. 2 periods (2 lec.)  
Basic terminology and spelling of commonly used drugs. Includes drug names, reference books, classification of drugs, and abbreviations and symbols.  
Offered: Fall, Spring.  

**HIT 125 Pathophysiology and Pharmacology for HIT**  
4 cr. hrs. 4 periods (4 lec.)  
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.  
Offered: Fall, Spring.  

**HIT 145 Introduction to Health Data Management**  
2 cr. hrs. 2 periods (2 lec.)  
Introduction to health data management. Includes history and evolution of the health record from paper-based charts to interactive electronic health record systems. Includes functions, content and structure of the health record, electronic collection, storage and analysis, healthcare data sets and applications in health information technology.  
Offered: Fall, Spring.  

**HIT 150 Health Management Information Systems**  
4 cr. hrs. 4 periods (4 lec.)  
Concepts, theory, and application of Health Management Information Systems (HMIS) from a managerial perspective. Includes evolution of HMIS; roles and responsibilities of managers through adoption and implementation including vision, strategy and execution; Online Health record accessibility, alternative methods of health information retrieval and future directions; HMIS technology and applications including customer relations and resource planning, hardware, software, and interface concepts; community health information networks; patient centered systems; HMIS integration and interoperability; HMIS planning and information requirements; system development including system analysis and developmental methodologies; data stewardship; systems implementation and management; HMIS standards adoption and managing innovation diffusion in healthcare organizations.  
Offered: Fall, Spring.  

**HIT 162 Medical Terms I**  
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, terminology beyond basic word analysis, prefixes, digestive system, pathology of the digestive system, laboratory tests - digestive system, clinical procedures - digestive system, urinary system, female reproductive system, male reproductive system, nervous system, cardiovascular system, and reference materials.  
Offered: May not be offered this year, check class schedule.
HIT 163 Medical Terms II
3 cr. hrs. 3 periods (3 lec.)
Continuation of HIT162; Includes anatomy and terminology of the respiratory system, blood system, lymphatic and immune system, musculoskeletal system, skin, sense organs: eyes and ears, endocrine system, cancer (oncology) medicine, radiology and nuclear medicine, pharmacology, psychiatry, language of medicine, and reference materials - advanced.

Prerequisite(s): HIT 162.
Offered: May not be offered this year, check class schedule.

HIT 165 Medical Office Procedures
3 cr. hrs. 4 periods (2 lec., 2 lab)
Services and procedures used in a medical office. Includes qualities of the office worker, healthcare industry, communications and human relations, telephone techniques, financial reports, word processing, administrative support and medical billing, filing, mail processing, content of medical health record and documentation, insurance and claims, and employment in a medical office/facility and the interview.

Recommendation: HIT 105.
Offered: Fall, Spring.

HIT 175 Health Information Statistics and Research
4 cr. hrs. 4 periods (4 lec.)
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.

Offered: Fall, Spring.

HIT 201 Advanced ICD Coding
3 cr. hrs. 4 periods (2 lec., 2 lab)
Advanced use of references, source documents, and computer software for diagnostic coding in health care settings for outpatient and inpatient hospital coding. Includes interpretation of ICD codes relative to inpatient and outpatient hospital reimbursement, analysis of inpatient and outpatient hospital source documents in a variety of settings to determine proper coding, prospective payment systems, auditing and analysis of patient charts, application of inpatient and outpatient diagnostic codes in the: integumentary, musculoskeletal, respiratory, cardiovascular, digestive, urinary, female and male reproductive, endocrine and nervous systems. Also includes codes for interventional radiology services; development of compliance program for enforcement of regulatory and governmental rules; application of confidentiality and privacy policies and procedures; abstracting data; and computer applications.

Prerequisite(s): HIT 102.
Offered: Fall, Spring, Summer.

HIT 202 Hospital Procedural Coding
3 cr. hrs. 4 periods (2 lec., 2 lab)
Focus on outpatient and inpatient procedural coding. Includes Current Procedural Terminology (CPT), ICD Volume 3, and Health Care Procedural Codes (HCPCS) guidelines update, modifier applications, evaluation and management services, code for procedures, integumentary system, musculoskeletal system, respiratory system, cardiovascular system, digestive system, urinary/male reproductive system, female reproductive system, endocrine/nervous systems, ocular and auditory systems, interventional radiology, prospective payment systems, abstracting data, current reimbursement issues, and computer applications.

Prerequisite(s): HIT 102.
Offered: Fall, Spring, Summer.

HIT 210 Medical Quality Assurance and Supervision
3 cr. hrs. 3 periods (3 lec.)
Principles and practices of healthcare management and personnel supervision. Includes health information management, required management skills, management planning, policies and procedures, human resources supervisory role, job analysis, interviews, evaluations, behavior, and motivation, meetings, orientations, and training, HIPPA regulations, productivity measurement and performance standards, organization models, technologies in health care, accreditation and licensure, ergonomics, and planning for a professional career in health information management.

Prerequisite(s): HIT 100, 110, 111.
Offered: Fall.

HIT 211 Medicolegal Aspects in Health Information Management
3 cr. hrs. 3 periods (3 lec.)
Introduction to 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, 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, 110, 111.
Offered: Spring.
HIT 225 Health Management Information Systems Projects
3 cr. hrs. 5 periods (2 lec., 3 lab)
Application of health management information systems from a managerial perspective. Includes use of real world software applications for development, strategy and execution of an information system. Includes database management, telecommunications and the Internet, vendor selection, online health record accessibility, data security and design of an organizational work plan.
Offered: Fall, Spring.

HIT 290 Health Information Technology Internship
3 cr. hrs. 11 periods (1 lec., 10 lab)
Volunteer Health Information Technology field experience at an approved work site. Includes communications, positive work attitudes, ethics, progress review, health information systems, professional development, employment strategies, and final evaluation within a classroom seminar setting.
Prerequisite(s): HIT 105 and permission of the instructor.
Information: Designed for students in their final semester of course work in the Health Information Technology option.
Offered: Fall, Spring, Summer.

History
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Information: 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.
Offered: F, Sp.

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.
Offered: Fall, Spring, Summer.

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 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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.
HIS 113 Chinese Civilization
3 cr. hrs. 3 periods (3 lec.)
Introductory survey of the civilization of China from its origins to the present. Includes Formative Period (prehistory-221 B.C.); unification and expansion (221 B.C.-A.D. 221); Period of Disunity (222-588); Tang-Sung Dynasty - flowering of Chinese culture (589-1279); Mongol (Yuan) Dynasty - impact 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-present).
Offered: Fall, Spring.

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).
Offered: Fall, Spring.

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.
Offered: Spring.

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.
Offered: Fall.

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.
Information: Same as ANT 127.
Offered: Fall, Spring.

HIS 128 History of the Dine’ (Navajo)
3 cr. hrs. 3 periods (3 lec.)
Examination of the Dine’ (Navajo) culture, historical development, and modern issues. Includes Spanish, Mexican, and U.S. relations with the Dine’, also includes religion and worldview of the Dine’ people, their role in World War II, boarding schools, and other contemporary issues.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall and Spring.
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.
Offered: Fall, Spring, Summer.

HIS 142HC History of the United States II: Honors
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. 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.
Offered: Fall and Spring.

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.
Offered: Fall, Spring.

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 ANT 148.
Offered: Fall, Spring.

HIS 150 African-American History and People
3 cr. hrs. 3 periods (3 lec.)
African-American history from the colonial period to the present. Includes identity, double consciousness, culture and arts, and political protest.
Offered: Fall.

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 background, colonial economy and society, and resistance and movements for independence in Latin America.
Recommendation: Placement on PCC assessment tests above REA 091 and into WRT 101.
Information: Course meets the AGEC Special Requirements of “I” (Intensive Writing), “G” (Global Awareness) and “C” (Cultural Diversity). Students will have writing assignments that require college level skills, and writing quality will be graded.
Offered: Fall, Spring, Summer.

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, early Twentieth Century, United States - Latin America relations, guerrilla movements and reaction and Latin America today.
Recommendation: HIS 160, and placement on PCC assessment exams above REA 091 and into WRT 101.
Information: Course meets the AGEC Special Requirements of “I” (Intensive Writing), “G” (Global Awareness), and “C” (Cultural Diversity). Students will have writing assignments that require college level skills, and writing quality will be graded.
Offered: Spring.

HIS 180 Women in Western History
3 cr. hrs. 3 periods (3 lec.)
Survey of women's history in the Western World from Antiquity to the Modern Age. Includes Ancient Near Eastern civilizations, women of the Classical World, medieval women, reformation and revolution in early modern and progressive eras, women and war in the Western World, and postwar social developments and movements.
Offered: Fall.
HIS 232 The Politics and History of Immigration
3 cr. hrs. 3 periods (3 lec.)
Examines the politics of immigration in the United States and the phenomenon of emigration in a global context. Includes analyses of the history of immigration as a result of the country’s political economy and its evolution and the role of immigration in the socio-political and economic development of the nation.
Information: Same as POS 232.
Offered: Fall.

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.
Offered: Fall.

HIS 244 Western America
3 cr. hrs. 3 periods (3 lec.)
Survey of the patterns of American expansion and settlement in the Western United States. Includes mythology and terminology surrounding the West, factors that made the West, political power and warfare, cultural and gender contributions to the West, and historiographers of the American West.
Offered: May not be offered this year, check class schedule.

HIS 245 Abraham Lincoln and the American Civil War
3 cr. hrs. 3 periods (3 lec.)
Overview of the American Civil War. Includes a survey of conditions that led to the American Civil War; an examination of the major political, military, social and economic events of the Civil War; and a treatment of the impact of the Civil War on the United States and the impact of the Civil War on the United States and the Confederate States of America. Also includes an emphasis on the political career of Abraham Lincoln and the destruction of slavery.
Offered: Fall, Spring.

HIS 253 History of Women in the United States: Early America
3 cr. hrs. 3 periods (3 lec.)
Survey of American women’s history from Colonization to the turn of the twentieth century. Includes history and politics of the region and country, women of the new republic, transformation of a nation, nineteenth century social and economic development of women, and Civil War, reconstruction, progressivism, and suffrage.
Offered: May not be offered this year, check class schedule.

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 1900 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 since the 1970’s.
Offered: Spring.

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 hate against the Jews in Europe, historical antecedents and preconditions of the Holocaust, the Third Reich and the creation of a racial state, the “Final Solution” and the aftermath.
Offered: Fall, Spring, Summer.

HIS 276 Tudor and Stuart England
3 cr. hrs. 3 periods (3 lec.)
Examination of Tudor England politics, economics, culture, and military. Includes the Battle of Bosworth Field, the reigns of Henry VIII and Edward VI, through the Anglican Reformation to Mary the first Queen Regnant of England to the Golden Age of Elizabeth I that fueled New World exploration and high sea adventures. Also includes James I who unified England and Scotland, Charles I, the English Civil War, Charles II, and James II, who fell in the Glorious Revolution.
Offered: Fall.

HIS 277 History of the Middle East: From the Rise of Islam to 1453
3 cr. hrs. 3 periods (3 lec.)
Survey of the history, religion, and culture of Muslim societies. Includes the Middle East in the Sixth Century CE, Muhammad and Qur’an, Islam and the Islamic State, Fatamids, Seljuks, and the Crusades, Mongols, Mamlue Egypt, and the Ottoman Turks.
Offered: May not be offered this year, check class schedule.

HIS 278 History of the Middle East: From 1453 to the Present Age
3 cr. hrs. 3 periods (3 lec.)
Survey of the history, religion and culture of the Islamic world from the fifteenth century through the modern period. Includes the Ottoman Empire, Safavid Empire, European imperialism and the early modern Middle East, world wars and the Middle East, and the modern Middle East.
Offered: May not be offered this year, check class schedule.
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.  
Offered: Fall, Spring.

HIS 281 Cold War: Soviet Confrontations and Vietnam  
3 cr. hrs. 3 periods (3 lec.)  
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.  
Offered: May not be offered this year, check class schedule.

HIS 284 Modern Israel and Arab/Israeli Relations  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to the modern State of Israel, Arab/Israeli relations, and the United States involvement in the Middle East, from the rise of Zionism in 19th century Europe to the present. Includes origins of modern Israel and Arab/Israeli relationships up to 1917, Palestine mandate, Zionist state-building, and Jewish/Arab relations up to 1948, State of Israel relations with Arab States, search for security, and U.S.’s role between 1948-1967, Arab/Israeli/Palestinian relations, quest for peace, and US.’s role between 1967-1984, Palestinian/Arab/Israeli relations and U.S.’s involvement in global and regional events from 1984 to the present.  
Offered: Spring.

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.  
Information: May be taken two times for a maximum of three credit hours.  
Offered: Spring.

Honors Program  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

HON 101 Honors Colloquium  
3 cr. hrs. 3 periods (3 lec.)  
Dynamic, interdisciplinary course introducing honors students to the adventure of scholarly research, writing, and conversation. Includes defining and debating contemporary social issues in relation to history, science, politics, economics, technology, psychology, and the arts. Also includes encouraging students to develop their creativity; enhance their practices of critical reflection, argumentation, and collaboration; and explore their understandings of cultural diversity in local and global contexts.  
Information: Students must be eligible for Honors courses based on placement tests, and/or have a 3.5 GPA, and/or be a Pima Scholar before enrolling in this course.  
Offered: Fall, Spring, Summer.

HON 210 College Honors Advisory Council  
1 cr. hrs. 1 periods (1 lec.)  
Student representative to the College Honors Advisory Council (CHAC). Includes CHAC meetings, reports, special Honors Program events, and end of semester report. Also includes local campus activities.  
Information: May be taken three times for a maximum of three credit hours.  
Offered: Fall, Spring, Summer.

HON 244 Honors Field Excursions  
1-3 cr. hrs. 1-3 periods (1-3 lec.)  
Field excursions to provide direct experience of foreign or domestic cultures and people, and of academic development events through travel and study. Includes a range of visits to foreign or domestic cultural and educational sites, local field excursions, or attendance at conferences and meetings.  
Recommendation: Consult instructor for prerequisites specific to planned excursion.  
Information: May require foreign or domestic travel expenses.  
Information: May be taken four times for a maximum of twelve credits hours.  
Offered: Spring.
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.
Offered: Fall, Spring.

Hotel and Restaurant Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

HRM 100 Introduction to the Hospitality Industry
3 cr. hrs. 3 periods (3 lec.)
Overview of the hospitality, travel, and tourism industry. Includes hospitality careers, foodservice, restaurant organization, hotels and hotel organization, meeting industry, management and leadership, human resources, marketing and selling, marketing communications, management companies, franchising, and ethics in hospitality management.
Offered: Fall, Spring.

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, hotel organization, front office operations, reservations, registration, front office accounting, check out and settlement, night audit, planning and evaluating operations, revenue management, and managing human resources.
Offered: Fall, Spring.

HRM 104 Hotel Food and Beverage Management
3 cr. hrs. 3 periods (3 lec.)
Hotel food and beverage operations and management. Includes volume food management history, management structures and functions, personnel management, facilities, tools, and equipment, purchasing and storage, beverage management and service, controlling costs/quality assurance, food preparation techniques, sanitation, liability issues, menus and recipes, and food products.
Offered: Fall.

HRM 110 Food Service Systems Management
3 cr. hrs. 3 periods (3 lec.)
Introductory course identifying and describing the various interrelated components of systematic foodservice management. Students will be introduced to cost management theory, system control, and financial management.
Offered: Fall.

HRM 111 Commercial Food
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to all facets of hot foods in a commercial kitchen including the application of the principles, procedures, and the techniques involved in small or large quantity food preparation and production.

Prerequisite(s): HRM 110.
Offered: Spring, Summer.

HRM 120 Meetings and Convention Management
3 cr. hrs. 3 periods (3 lec.)
Principles for the professional meeting manager. Includes site selection, conventions and visitors bureaus, the art of negotiation, confirmation letters, contracts, and lease agreements, program planning, budgeting and financial management, liability and convention/meeting insurance, housing, working with meeting facilities, food and beverage arrangements, transportation, audio-visual equipment, and exhibitions.
Offered: May not be offered this year, check class schedule.

HRM 135 Catering for Meetings and Events
3 cr. hrs. 3 periods (3 lec.)
Introduction to catering industry involving both on-premise and off-premise catering businesses. Includes concepts and skills related to client relations, menu planning based on client needs, budgeting and proposals, current catering practices, time management, scheduling, and client follow-up. Also includes research in catering trends, theme catering incorporating cultural and ethic sensitivity, appropriate venue selection as applied to overall client and guest satisfaction.

Prerequisite(s): HRM 110.

Information: Prerequisite may be waived with departmental consent.
Offered: Fall.
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 110.
Recommendation: Students should be 21 years of age.
Offered: May not be offered this year, check class schedule.

HRM 145 Hospitality Purchasing Management
3 cr. hrs. 3 periods (3 lec.)
Introduction to the essential managerial aspects of hospitality purchasing. Includes product identification, supplier information, and the receiving, storing and issuing practices currently used in the hospitality industry with an emphasis on strategic selection and procurement considerations based on item need and value and supplier information. Also includes the purchase of major equipment, small wares, textiles and vendor services, as well as, the use of computer software designed for purchasing in the hospitality industry.

Prerequisite(s): HRM 110.
Offered: May not be offered this year, check class schedule.

HRM 150 Executive Housekeeping
3 cr. hrs. 3 periods (3 lec.)
Foundations and applications of housekeeping operations. Includes housekeeping techniques, organizational planning and laundry operations, and procedures and guidelines for security and safety.
Offered: Fall, Spring.

HRM 199 Introduction to Co-op: Hotel and Restaurant Management
1 cr. hrs. 1 periods (1 lec.)
See Cooperative Education (CED) section for description.
Corequisite(s): HRM 199WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: Fall, Spring.

HRM 199WK Co-op Work: Hotel and Restaurant Management
1-8 cr. hrs. 5-40 periods (5-40 lab)
See Cooperative Education (CED) section for description.
Corequisite(s): HRM 199.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: Fall, Spring.

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.
Offered: May not be offered this year, check class schedule.

HRM 235 Hospitality Law
3 cr. hrs. 3 periods (3 lec.)
Examination of legal aspects of hospitality management. Includes basic legal principles governing hospitality operation, hotel-guest relationship, hotel’s duties to guest and others, laws relating to restaurants, foodservice, and bars, and laws relating to hotel employees and general hotel operations.

Prerequisite(s): HRM 100.
Offered: Fall.

HRM 245 Hospitality Human Resource Management
3 cr. hrs. 3 periods (3 lec.)
Examination of personnel issues. Includes recruitment, selection, orientation, training, wage and benefit, legal issues, and employee appraisal.

Prerequisite(s): HRM 100.
Offered: Spring.
HRM 299 Introduction to Co-op: Hotel and Restaurant Management
1 cr. hrs. 1 periods (1 lec.)
See Cooperative Education (CED) section for description.
**Prerequisite(s):** A minimum of 12 credit hours of Hotel and Restaurant Management (HRM) prefix courses or one year of related industry work experience is required before enrolling in this course.
**Corequisite(s):** HRM 299WK.
Offered: Spring.

HRM 299WK Co-op Work: Hotel and Restaurant Management
1-3 cr. hrs. 5-15 periods (5-15 lab)
See Cooperative Education (CED) section for description.
**Prerequisite(s):** A minimum of 12 credit hours of Hotel and Restaurant Management (HRM) prefix courses or one year of related industry work experience is required before enrolling in this course.
**Corequisite(s):** HRM 299.
Offered: May not be offered this year, check class schedule.

Human Resources Management
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall.

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.
Offered: Fall.

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.
Offered: Fall.

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.
Offered: Spring.

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 the needs assessment, designing the training program, implementing the training program, evaluating the training program, special topics in training and development, elements of career development programs, career development and management succession, career development for a diverse workforce, personal career development, performance appraisal programs, developing an effective appraisal program, performance appraisal methods, and appraisal interview.
Offered: Spring.

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.
Offered: Spring.
**Humanities**

*For courses numbered 098, 198, 298, see "Topic Courses" on page 286*

**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.

Offered: Fall, Spring, Summer.

**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.

Offered: May not be offered this year, check class schedule.

**HUM 251 Western Humanities I**

3 cr. hrs. 3 periods (3 lec.)
Introduction to major cultures from Sumer 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.

Offered: Fall, Spring, Summer.

**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.

Offered: Fall, Spring.

**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.

Offered: Fall, Spring.

**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.

Offered: Fall, Spring, Summer.

**HUM 270 Meditation**

3 cr. hrs. 3 periods (3 lec.)
Theoretical principles and selected traditions of meditation self-awareness. Includes principles and techniques of meditation, meditation traditions, literature of meditation, meditation arts, and psychology and physiology of meditation.

*Information: Same as PSY 270.*

Offered: Fall, Spring, Summer.

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**Interior Design**

*For courses numbered 098, 198, 298, see "Topic Courses" on page 286*

**IDE 100 Introduction to Interior Design**

3 cr. hrs. 3 periods (3 lec.)
Foundations of the major aspects of Interior Design. Includes introduction to interior design, principles and elements, materials, furnishings, and other components, process of interior design, and vocabulary.

Offered: May not be offered this year, check class schedule.
IDE 111 Fundamentals of Interior Design
3 cr. hrs. 4 periods (2 lec., 2 lab)
Fundamentals and theories of interior design. Includes elements and principles of interior design, design practices, two
dimensional (2D) and three dimensional (3D) compositions, and portfolio projects.
**Recommendation:** Completion of IDE 100 before enrolling in this course or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

IDE 122 Visual Communications I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Interior design visualization techniques and processes. Includes drawing, sketching, skills and mechanics in drafting, and
drawing tools and materials.
Offered: May not be offered this year, check class schedule.

IDE 152 Color and Lighting Theory
3 cr. hrs. 4 periods (2 lec., 2 lab)
Design concepts for interior design color and lighting. Includes vision, perception, color and lighting theories, color schemes,
design concepts, techniques and applications, psychological implications, and designing an interior for color and lighting.
**Prerequisite(s):** IDE 122 or concurrent enrollment.
**Recommendation:** Completion of IDE 111 before enrolling in this course.
Offered: May not be offered this year, check class schedule.

IDE 155 Space Planning I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Theory and methods of information gathering for design projects. Includes programming and planning, research and
observation, diagramming methods, skills in drafting, and human factors and behavior.
**Prerequisite(s):** IDE 122 or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

IDE 158 Computer Aided Drafting Fundamentals for Interior Design
4 cr. hrs. 6 periods (3 lec., 3 lab)
Two-dimensional computer-aided drafting concepts and techniques for Interior Design. Includes drafting methods and
procedures, file management, hard copy production, industry standards, use of scale, blocks and symbol libraries, and
portfolio development.
**Prerequisite(s):** IDE 122.
**Recommendation:** IDE 111.
Offered: May not be offered this year, check class schedule.

IDE 160 Fabrics for Interiors
3 cr. hrs. 4 periods (2 lec., 2 lab)
Analysis, evaluation, and application of fabrics. Includes history of fabrics, fiber content, fabric construction, fabric finishes
and techniques, and fabric trends.
**Prerequisite(s):** IDE 111.
Offered: May not be offered this year, check class schedule.

IDE 196 Independent Study in Interior Design
1-4 cr. hrs. 3-12 periods (3-12 lab)
Independent readings or special projects. Content to be determined by conference between student and instructor.
**Information:** Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

IDE 212 History of Interior Arch & Furniture: Egyptian Period - 1900
3 cr. hrs. 3 periods (3 lec.)
Survey of historical architecture, interior treatments, furnishings, and decorative arts. Includes the Classical Period, the
Middle Ages, the Renaissance, and Early America.
Offered: May not be offered this year, check class schedule.

IDE 213 History of Interior Architecture & Furniture from 1900-Pres
3 cr. hrs. 3 periods (3 lec.)
Survey of historical architecture, interior treatments, furnishings, and decorative arts. Includes cultural aspects and
characteristics of early Twentieth Century, Modernism, Revolution and the Avant-Garde, Contemporary designs, and issues
and trends.
Offered: May not be offered this year, check class schedule.

IDE 220 Interior Methods and Materials
3 cr. hrs. 3 periods (3 lec.)
Elements and applications of interior products. Includes specifications for finishes and materials, estimating techniques for
interiors, product materials for interiors, environmental concerns, and design solutions.
**Prerequisite(s):** IDE 100.
Offered: May not be offered this year, check class schedule.
IDE 222 Visual Communications II  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Continuation of IDE 122. Includes advanced techniques in black and white and color, measured drawings, fundamental design in visual communications, and rendering for interior design.  
**Prerequisite(s):** IDE 122.  
**Recommendation:** Completion of CAD 158 before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

IDE 230 Interior Design Business and Professional Practices  
3 cr. hrs. 3 periods (3 lec.)  
Professional business principles and practices for the interior designer. Includes business action plan, business structure, professional services, design firm model, business principles, contractual relationships, and business correspondence.  
**Prerequisite(s):** IDE 111.  
**Recommendation:** Assessment in Mathematics at the MAT 086 level or higher before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

IDE 255 Space Planning II  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Continuation of IDE 155. Includes programming and planning review, advanced research and observation, advanced diagramming methods illustrating design concepts, advanced drafting including commercial interiors, measurement of human psychological and sociological factors, and presentations.  
**Prerequisite(s):** IDE 122, 155.  
Offered: May not be offered this year, check class schedule.

IDE 256 Human and Environmental Design  
3 cr. hrs. 3 periods (3 lec.)  
Theories of human factors and environmental issues relating to interior design. Includes design problems, built environment, health, safety and welfare, materials, finishes, fabrications, and human factors.  
**Prerequisite(s):** IDE 155.  
Offered: May not be offered this year, check class schedule.

IDE 280 Interior Design Portfolio Development  
1 cr. hrs. 1 periods (1 lec.)  
Identification of portfolio content. Includes project parameters, procedures and methods, portfolio content, and critique.  
**Recommendation:** Completion of IDE 255 before enrolling in this course or concurrent enrollment.  
Offered: May not be offered this year, check class schedule.

**International Business Studies**  
*For courses numbered 098, 198, 298, see "Topic Courses" on page 286*

IBS 120 Cultural Environment of International Business  
3 cr. hrs. 3 periods (3 lec.)  
Examination of the cultural values of the foreign country in comparison to those of the United States. Includes social and religious customs, roles of men and women, attitudes toward time, humor, drugs and alcohol, and patterns of communication. Also includes political, educational and legal structures, health care values, attitudes toward shopping and conducting business, business structure, ethics and values.  
Offered: May not be offered this year, check class schedule.

**Interpreter Training**  
*For courses numbered 098, 198, 298, see "Topic z" on page 286*

ITP 105 Beginning Fingerspelling and Numbers  
2 cr. hrs. 2 periods (2 lec.)  
Enhancement of receptive and expressive sign language skills, methodology, theory, and application. Includes manual alphabet, numbers, basic monetary designations, basic mathematical functions, regional states, cities, and calendar designations. Also includes common acronyms, basic lexicalized fingerspelling, and history of fingerspelling.  
**Prerequisite(s):** SLG 102 and REA 075.  
**Information:** Additional lab hours are required outside of regularly scheduled class.  
Offered: Fall, Spring.
ITP 200 Introduction to the Deaf Community
4 cr. hrs. 4 periods (4 lec.)
 Exploration of the history of American Sign Language (ASL), the deaf community, and the experiences of deaf individuals. Includes norms, values, traditions, and roles of social behaviors. Also includes cross-cultural interactions between deaf and hearing people. Students will also explore the history of the Deaf community, the history of deaf education, issues in language and culture, and Deaf services and programming policies.
Prerequisite(s): SLG 202 and WRT 102.
Offered: Fall.

ITP 203 Linguistics of American Sign Language
3 cr. hrs. 3 periods (3 lec.)
 Introduction to the linguistic structure of American Sign Language (ASL). Includes history, language requirements, linguistic fields, communication systems, assimilation/ symmetry, ASL and English comparisons, time/tense indicators, semantics, morphology, syntax, phonology, modulation/inflection and classifiers/SASes. Also includes conjunctions, reality principle, conversational regulators, relative clauses, ASL research topics, gloss/transcription, current issues, and linguistic research paper.
Prerequisite(s): SLG 202 and WRT 102.
Information: Student is required to write a linguistic research paper.
Offered: Fall.

ITP 205 Advanced Fingerspelling and Numbers
2 cr. hrs. 2 periods (2 lec.)
 Advanced receptive and expressive fingerspelling and number skills. Includes lexicalized fingerspelling, related theories/methodologies, numbers, advanced monetary designations, basic and advanced mathematical functions, acronyms for deaf-related organizations and services, common abbreviations, commonly fingerspelled words, major cities, states, and proper nouns.
Prerequisite(s): ITP 105 and SLG 201.
Information: Additional lab hours are required outside of regularly scheduled class.
Offered: Fall, Spring, Summer.

ITP 210 Introduction to Interpreting
4 cr. hrs. 4 periods (4 lec.)
 Introduction to the field and role of a sign language interpreter. Includes defining the client(s), sign language systems and situational assessments, Repetitive Motion Injury RMI, history of spoken and sign language interpreters, certification and licensing of sign language interpreters, and prerequisite knowledge and skills. Also includes the profession of an interpreter, interpreter role and ethics, process of interpreting, settings, and assignment related topics.
Prerequisite(s): SLG 202 and WRT 102.
Offered: Fall.

ITP 215 Classifiers and ASL Literature
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 and poetic techniques, film analysis, story analysis, and its techniques. Also includes ASL narratives, classifiers and size and shape specifiers (SSAses), and perspectives.
Prerequisite(s): SLG 202 and WRT 102.
Information: This course is taught in ASL and utilizes receptive skills through ASL literature and poetic videotapes.
Information: Additional hours may be required outside of the regularly scheduled class.
Offered: Spring.

ITP 220 Interpreting I
4 cr. hrs. 4 periods (4 lec.)
 Practical experience in consecutive and simultaneous voice to sign interpreting with increasingly complex and diverse materials. Includes applying the process of interpreting, discourse styles and registers, assignment considerations, physical considerations, application of the Code of Professional Conduct, and giving and receiving feedback, and professional issues. Also includes linguistic/syntax, American Sign Language (ASL) comparisons.
Prerequisite(s): ITP 210 and WRT 102.
Information: Additional lab hours may be required outside regularly scheduled class.
Offered: Spring.
**ITP 250 Interpreting II**  
4 cr. hrs. 4 periods (4 lec.)  
Continuation of ITP 220. Continued development of expressive and receptive interpreting skills in educational and community situations. Includes practical considerations, interpreters role, certification, licensure, communication systems, multiple roles, and code of Professional Conduct. Also includes interpreting, transliterating, idiomatic interpreting, sign invention, team interpreting, giving and receiving feedback, current issues, and environmental dynamics.  
**Prerequisite(s):** ITP 220.  
**Information:** Additional lab hours may be required outside of class.  
**Offered:** Fall.

**ITP 268 Etymology**  
4 cr. hrs. 4 periods (4 lec.)  
Designed to improve and increase English vocabulary and conceptual American Sign Language (ASL) correlates for the sign language interpreter. Includes word origins, common word families, contextual vocabulary building, English idioms, and ASL signs having multiple English translations.  
**Prerequisite(s):** REA 075 and SLG 202.  
**Offered:** Spring.

**ITP 270 Beginning Sign to Voice**  
4 cr. hrs. 4 periods (4 lec.)  
Interpreting basic sign language communication into the spoken word. Practical experience in consecutive and simultaneous sign to voice interpreting with increasingly complex and diverse materials. Includes applying the process of interpreting, discourse styles and registers, assignment considerations, physical considerations, and application of the Code of Professional Conduct. Also includes voicing considerations, linguistic/syntax, American Sign Language (ASL)/English comparisons, pre- and post-situational assessment, giving/receiving feedback, and professional issues.  
**Prerequisite(s):** ITP 210 and SLG 202.  
**Information:** Additional lab hours outside of class are required.  
**Offered:** Spring.

**ITP 280 Advanced Sign to Voice**  
4 cr. hrs. 4 periods (4 lec.)  
Interpreting complex sign language structures into the spoken word. Includes voicing considerations, team interpreting, registers, word/phrase selection, current issues, and environmental dynamics.  
**Prerequisite(s):** ITP 270.  
**Information:** Additional lab hours are required outside of regularly scheduled class.  
**Offered:** Fall.

**ITP 285 Educational Interpreting/Transliterating**  
4 cr. hrs. 4 periods (4 lec.)  
Interpreting in educational settings. Includes transliterating, professional readiness, settings and expectations, and legal and ethical issues.  
**Prerequisite(s):** ITP 250 or 280.  
**Information:** Additional hours may be required outside of regularly scheduled class.  
**Offered:** Spring.

**ITP 286 Video Relay Interpreting**  
4 cr. hrs. 4 periods (4 lec.)  
Development of interpreting and transliterating skills and receptive and expressive skill refinement in video relay call situations. Includes FCC regulations, application of Code of Professional Conduct, call management, and specialized protocols. Also includes support systems, situational and language assessments, team interpreting, and equipment usage.  
**Prerequisite(s):** ITP 250, 280.  
**Information:** Prerequisite(s) may be waived with consent of instructor.  
**Offered:** Summer.

**ITP 289 Topics in Interpreting**  
3 cr. hrs. 3 periods (3 lec.)  
Continued development of interpreting and transliterating skills and receptive and expressive skills refinement in consecutive and simultaneous interpreting situations. Topics include specialized settings, specialized vocabulary, specialized protocols, support systems, situational and language assessment, facilitating the communication process, and preparation for national certification exams.  
**Prerequisite(s):** ITP 250, 280.  
**Information:** Additional lab hours may be required outside of regularly scheduled class.  
**Offered:** Fall.
ITALIAN

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

ITA 101 Elementary Italian I  SUN# ITA 1101
4 cr. hrs. 4 periods (4 lec.)
Introduction to the Italian language. Includes foundations of Italian language, basic Italian grammar, structures and tenses, basic compositions in Italian, formulating answers in Italian, and Italian culture.
Offered: Fall, Spring.

ITA 102 Elementary Italian II  SUN# ITA 1102
4 cr. hrs. 4 periods (4 lec.)
Continuation of ITA 101. Includes additional Italian grammar and structure, transactions and topics in Italian, Italian compositions, manipulating meaning from readings, and interpreting meaning from listening.
Prerequisite(s): ITA 101.
Offered: Fall, Spring.

ITA 201 Intermediate Italian I  SUN# ITA 2201
4 cr. hrs. 4 periods (4 lec.)
Continuation of ITA 102. Includes intermediate Italian grammar structures, response to unanticipated questions, political, economic, and social vocabulary in readings and writings, intermediate literary interpretation, complex essays in Italian, intermediate level of Italian culture, and extracting meaning from listening.
Prerequisite(s): ITA 102.
Offered: May not be offered this year, check class schedule.

ITA 202 Intermediate Italian II  SUN# ITA 2202
4 cr. hrs. 4 periods (4 lec.)
Continuation of ITA 201. Includes additional intermediate Italian grammar and sentence structures, communication and cultural topics, responses to complex written form, listening practice, Italian performance, and additional examination of Italian culture.
Prerequisite(s): ITA 201.
Offered: May not be offered this year, check class schedule.

JAPANESE

For courses numbered 098, 198, 298, see "Topic Courses” on page 286

JPN 085 Introductory Japanese
4 cr. hrs. 4 periods (4 lec.)
Elementary Japanese conversation. Includes an overview of the Japanese language, writing and pronunciation, and useful daily expressions. Also includes Japanese culture and communication.
Offered: Fall, Spring, Summer.

JPN 101 Elementary Japanese I  SUN# JPN 1101
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.
Offered: Fall.
JPN 102 Elementary Japanese II  SUN# JPN 1102
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.
Offered: Fall, Spring.

JPN 201 Intermediate Japanese I  SUN# JPN 2201
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.
Offered: Fall.

JPN 202 Intermediate Japanese II  SUN# JPN 2202
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.
Offered: Spring.

Journalism
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

JRN 101 Introduction to Reporting and Media Writing  SUN# JRN 2201
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 100 or required score on the writing assessment test.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

JRN 185 Newspaper Publishing
3 cr. hrs. 9 periods (9 lab)
Publication of the college’s weekly student newspaper and online edition of the newspaper. Includes news judgment, news gathering, news and editorial writing, editing and headline writing, photography, page design and computer pagination, advertising, and other publication activities. Also includes newsroom management and ethical and legal considerations.
Prerequisite(s): JRN 101.
Information: May be taken three times for a maximum of nine credit hours.
Offered: Fall, Spring.

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.
Offered: Fall.

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.
Offered: Spring.
JRN 240 Editing, Layout, and Design  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
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.  
**Prerequisite(s):** JRN 101.  
**Offered:** May not be offered this year, check class schedule.

JRN 260 Magazine and Feature Writing  
3 cr. hrs. 3 periods (3 lec.)  
Writing newspaper and magazine feature articles for publication. Includes types of features, generating story ideas, guidelines for research, interviewing and writing; composing query letters, and submitting feature stories for publication.  
**Prerequisite(s):** JRN 101.  
**Offered:** Spring.

JRN 280 Photojournalism  
3 cr. hrs. 5 periods (2 lec., 3 lab)  
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.  
**Prerequisite(s):** JRN 101.  
**Offered:** Fall, Spring.

JRN 285 Advanced Newspaper Publishing  
3 cr. hrs. 9 periods (9 lab)  
Advanced work on print and online publication of the College's biweekly student newspaper. Includes advanced reporting, copy editing, photography, multimedia production, page design, and newsroom management. Also includes legal and ethical considerations.  
**Prerequisite(s):** JRN 185.  
**Information:** May be taken three times for a maximum of nine credit hours.  
**Offered:** Fall, Spring.

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.  
**Offered:** Fall, Spring.

Korean

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.  
**Offered:** May not be offered this year, check class schedule.

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.  
**Offered:** May not be offered this year, check class schedule.
**Landscape Technician**

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**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.
Offered: May not be offered this year, check class schedule.

**LTP 129 Landscape Design I**
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.
Offered: May not be offered this year, check class schedule.

**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.
Offered: May not be offered this year, check class schedule.

**LTP 179 Landscape Design II**
3 cr. hrs. 3 periods (3 lec.)
Continuation of LTP 129. Includes a review of principles and techniques, advanced project requirements and design principles, analysis of existing landscape installations, application of concepts from existing landscape installations, and an advanced final project.
**Prerequisite(s):** LTP 129.
Offered: May not be offered this year, check class schedule.

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**Latin**

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**LAT 101 Elementary Latin I** SUN# LAT 1101
4 cr. hrs. 4 periods (4 lec.)
Introduction to the Latin language through reading and composition. Includes present tense, nominative and accusative cases, 1st and 2nd declensions, ablative and vocative cases, present infinitives, 3rd declension, commands and questions, genitive and dative cases, adverbs and relative pronoun, demonstrative, personal and reflexive pronouns, and imperfect and perfect tenses, piuperfect tense and 4th and 5th declensions, and topics in ancient Roman history and culture.
Offered: Fall.

**LAT 102 Elementary Latin II** SUN# LAT 1102
4 cr. hrs. 4 periods (4 lec.)
Continuation of LAT 101. Includes comparison of adjectives and irregular superlatives, present participle, future and future perfect tenses, and relative clauses, passive voice and perfect passive participle, subjunctive mood, clauses of purpose, and indirect commands, deponent verbs, ablative absolute, and future participle, and topics in ancient Roman history and culture.
**Prerequisite(s):** LAT 101.
Offered: May not be offered this year, check class schedule.

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**Law Enforcement Academy**

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

**LEA 101 Law Enforcement Academy Phase I**
15 cr. hrs. 15 periods (15 lec.)
Basic concepts, techniques, and applications in law enforcement. Includes an introduction to law enforcement, ethics and leadership, law and legal matters, multicultural issues, and community and police relations. Also includes standards required of law enforcement personnel and the functions and responsibilities of the Arizona Peace Officer Standards and Training Board (Az POST).
**Information:** Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
**Information:** LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.
Offered: Contact department at 206-6350.
LEA 102 LEA Introduction to Law Enforcement  
1 cr. hrs. 1 periods (1 lec.)  
Overview of the components of the criminal justice system, their functions, responsibilities and interrelationships. Includes a historical perspective, an outline of regulatory agency functions, responsibilities, jurisdictional limitations, techniques of management and supervision, problem solving strategies, and the relationship between employee and supervisor. Also includes standards required of law enforcement personnel and the functions and responsibilities of the Arizona Peace Officer Standards and Training Board (Az POST).  
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.

LEA 103 LEA Ethics and Leadership  
3 cr. hrs. 3 periods (3 lec.)  
Principles of ethical behavior for law enforcement professionals. Includes establishing a leadership role within the community. Also includes the Law Enforcement Code of Ethics, and the Canons of Police Ethics as a basis to establish trust and protect a positive image of law enforcement.  
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.

LEA 104 LEA Law and Legal Matters I  
3 cr. hrs. 3 periods (3 lec.)  
Examination of the basic concepts, phrases and definitions needed to study criminal law. Includes an analysis of constitutional requirements, statutes and case law on search and seizure, the conditions under which an officer or citizen may make an arrest, an officer's duties and responsibilities prior to and during the arrest, and the rules of evidence. Also includes summonses and subpoenas, civil processes, and the functions of the various courts, agencies, and laws relating to juveniles.  
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.

LEA 105 LEA Multicultural Issues  
3 cr. hrs. 3 periods (3 lec.)  
Exploration of the value of diversity in a law enforcement environment. Includes the standards and norms of different groups and individuals and how they impact the attitudes and behaviors. Also includes the need to adapt interactions without compromising established societal norms.  
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.

LEA 106 LEA Community and Police Relations  
2 cr. hrs. 2 periods (2 lec.)  
Benefits and methods of developing positive police-community relations and recognizing cultural differences within the community. Includes the emotional and behavioral indicators of crime victims, personal communication, crime prevention functions of the patrol officer and various crime prevention programs.  
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.

LEA 107 LEA Interpersonal Relations in Law Enforcement  
3 cr. hrs. 3 periods (3 lec.)  
Exploration of the interactions of law enforcement professionals with peers and the public. Includes the unique roles and expectations which occur when entering a law enforcement career. Also includes specific methods and techniques used in a situational interactions.  
Information: Admission to the Law Enforcement Program or permission of the Law Enforcement Department is required before enrolling in this course.  
Information: LEA 102, 103, 104, 105, 106, and 107 together constitute LEA 101.  
Offered: Contact department at 206-6350.
LEA 200 Law Enforcement Academy (LEA) Phase II
16 cr. hrs. 16 periods (16 lec.)
Continuation of LEA 101. Includes the law and legal matters, patrol procedures, traffic enforcement and investigation, criminal investigation, and records and reports. Also includes standards required of law enforcement personnel and the functions and responsibilities of the Arizona Peace Officer Standards and Training Board (Az POST).

Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.

LEA 201 LEA Law and Legal Matters II
3 cr. hrs. 3 periods (3 lec.)
Continuation of LEA 104. Includes the proper techniques for giving effective police testimony, outline of the United States Constitution, Arizona Revised Statutes (ARS) Title 13, and a review of common civil and criminal liability facing law enforcement agencies and officers.

Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.

LEA 202 LEA Patrol Procedures
3 cr. hrs. 3 periods (3 lec.)
Study of the types, purposes and techniques of police patrol. Includes citizen protection, crime prevention, emergency and non-emergency situations, safely conducting a high risk vehicle stop, domestic disputes and managing crisis situations, mental illness and criminal behavior, crimes in progress, indicators of alcohol intoxication, and symptoms of medical conditions. Also includes use of police radio, hazardous materials, disasters, hate motivated acts, fires, and civil disputes.

Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.

LEA 203 LEA Traffic Enforcement and Investigation
3 cr. hrs. 3 periods (3 lec.)
Introduction to the attitude and techniques essential in dealing effectively with traffic violators. Includes the effects of alcohol and drugs on drivers and techniques for obtaining evidence for successful prosecution, the legal basis of the Uniform Traffic Citation, specific techniques for stopping and approaching suspects in vehicles, traffic collision investigation, and proper methods for taking and recording evidence at the collision scene. Also includes techniques for directing and controlling vehicular and pedestrian movements by means of hand signals, and applicable sections of the Arizona Revised Statutes relating to law enforcement authority.

Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.

LEA 204 LEA Criminal Investigation
4 cr. hrs. 4 periods (4 lec.)
Principles common to all types of investigation. Includes conducting a proper search, sketching the crime scene, recording and preserving notes, packaging and marking evidence for identification, synthesizing information into a final report, the functions of a crime laboratory, proper interviewing and questioning techniques, and methods of fingerprinting. Also includes investigating the more common sex crimes, procedures for investigating cases involving death, organized criminal activities, techniques used in the investigation of assault, burglary, robbery, auto theft, child abuse, missing persons, and narcotics and dangerous drug violations.

Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.
LEA 205 LEA Records and Reports
3 cr. hrs. 3 periods (3 lec.)
Introduction to the characteristics of good reports and field notes and obtaining and using investigative information from police records systems. Includes form, style, and procedures for writing various reports, techniques for developing an accurate narrative, and proper and improper conclusions. Also includes modern technology in police data processing and information available through the use of local state and national records.
Prerequisite(s): LEA 101, or LEA 102, 103, 104, 105, 106, and 107.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 201, 202, 203, 204, and 205 together constitute LEA 200.
Offered: Contact department at 206-6350.

LEA 220 Law Enforcement Academy Phase III
16 cr. hrs. 16 periods (16 lec.)
Continuation of LEA 200. Concepts, techniques, and applications to develop law enforcement proficiency skills. Includes emergency medical care, legal implications, weapons, and firearms strategies, tactics, and use; the development and demonstration of each participant’s mental and physical condition; and techniques for maintaining physical control of disruptive, combative, or potentially dangerous subjects, such as restraint holds and other defensive tactics. Includes defensive driving techniques, methods, and applications. Also includes the liabilities and responsibilities associated with the use of force and factors in use of force situations. Also includes standards required of law enforcement personnel and the functions and responsibilities of the Arizona Peace Officer Standards and Training Board (Az POST).
Prerequisite(s): LEA 200, or LEA 201, 202, 203, 204, and 205.
Information: Admission to the Law Enforcement Academy or consent of Law Enforcement Coordinator is required before enrolling in this course.
Information: The student must achieve a minimum qualification score and demonstrate proficiency in the use and deployment of all weapons to successfully complete this course.
Information: Students must score in the fair range for all measures to complete this course.
Information: LEA 221, 222, 223, and 224 together constitute LEA 220.
Offered: Contact department at 206-6350.

LEA 221 LEA Police Proficiency Skills I
4 cr. hrs. 4 periods (4 lec.)
Methods of first aid and stress management. Includes providing emergency medical care to victims, legal and civil issues, and proper procedures for handling various traumas. Also includes the manifestations and techniques of managing personal job-related stress.
Prerequisite(s): LEA 200, or LEA 201, 202, 203, 204, and 205.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: The student must achieve a minimum qualification score and demonstrate proficiency in the use and deployment of all weapons to successfully complete this course.
Information: LEA 221, 222, 223, and 224 together constitute LEA 220.
Offered: Contact department at 206-6350.

LEA 222 LEA Police Proficiency Skills II
4 cr. hrs. 4 periods (4 lec.)
Continuation of LEA 221. Weapons and firearm safety, use, and less lethal options. Also includes the mechanical, safety features, servicing, and deployment of weapons and tactics.
Prerequisite(s): LEA 221.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: The student must achieve a minimum qualification score and demonstrate proficiency in the use and deployment of all weapons to successfully complete this course.
Information: LEA 221, 222, 223, and 224 together constitute LEA 220.
Offered: Contact department at 206-6350.

LEA 223 LEA Police Proficiency Skills III
4 cr. hrs. 4 periods (4 lec.)
Continuation of LEA 222. Includes the development and demonstration of each participant’s mental and physical condition through structured exercise and classroom education. Also includes various techniques for maintaining physical control of disruptive, combative, or potentially dangerous subjects, including restraint holds and other defensive tactics.
Prerequisite(s): LEA 222.
Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.
Information: LEA 221, 222, 223, and 224 together constitute LEA 220.
Offered: Contact department at 206-6350.
LEA 224 LEA Police Proficiency Skills IV
4 cr. hrs. 4 periods (4 lec.)
Continuation of LEA 223. Includes basic defensive driving techniques, hazardous road conditions, dynamics of a moving vehicle, the driving task, pursuit and high speed response procedures, high speed vehicle control, and methods to successfully stop fleeing vehicles. Also includes the liabilities and responsibilities associated with the use of force and factors in use of force situations.

Prerequisite(s): LEA 223.

Information: Admission to the Law Enforcement Academy or consent of the Law Enforcement Coordinator is required before enrolling in this course.

Information: Students must score in the fair range for all measures to complete this course.

Information: LEA 221, 222, 223, and 224 together constitute LEA 220.

Offered: Contact department at 206-6350.

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Literature

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

LIT 124 Introduction to Writers of the Southwest
3 cr. hrs. 3 periods (3 lec.)
Introduction to reading 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.

Information: Students do not need to have a writing prerequisite.

Offered: May not be offered this year, check class schedule.

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.

Offered: May not be offered this year, check class schedule.

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): WRT 102 or 108.

Offered: May not be offered this year, check class schedule.

LIT 226 Fantasy Literature: The Epic
3 cr. hrs. 3 periods (3 lec.)
Survey of fantasy literature in a variety of and media emphasizing the epic tradition. Includes the development and components of the fantasy epic and critical analysis of fantasy epic literary works. Also includes the role of mythology and archetypes in the formation of such works.

Prerequisite(s): WRT 102 or 108.

Offered: May not be offered this year, check class schedule.

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): WRT 102 or 108.

Offered: Spring.

LIT 240 American Literature of Opposition
3 cr. hrs. 3 periods (3 lec.)
Protest and anti-establishment literature of the nineteenth and twentieth centuries in a variety of genres and media. Includes oppositional works from across the political and cultural spectrums. Also includes essay writing and critical thinking. May include contemporary Internet and alternative media.

Prerequisite(s): WRT 102 or 108.

Offered: May not be offered this year, check class schedule.
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): WRT 102 or 108.
Offered: Fall, Spring.

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): WRT 102 or 108.
Offered: Fall, Spring.

LIT 263 Postmodern Literature
3 cr. hrs. 3 periods (3 lec.)
Examination of postmodern literary works and voices from the United States, South America, Europe, and a variety of other nations and cultures. Includes analysis of the literature and context of the postmodern period (1945 to the present) with a focus on social and historical influences including technology, mass communication, globalization, politics, protest, and war. Also includes exploration of conventional genres and newer emerging forms, such as metafiction, magic realism, language poetry, and hypertext.
Prerequisite(s): WRT 102 or 108.
Offered: May not be offered this year, check class schedule.

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): WRT 102 or 108.
Offered: Fall, Spring.

LIT 266 World Drama
3 cr. hrs. 3 periods (3 lec.)
Major dramatic works. Includes literary forms, historical context, psychological and moral implications of the literature, and cultural significance of plays.
Prerequisite(s): WRT 102 or 108.
Offered: May not be offered this year, check class schedule.

LIT 267 World Literature: Narrative
3 cr. hrs. 3 periods (3 lec.)
Multicultural readings of great narrative works of western literary tradition. Includes an introduction to narrative literature and works from major periods, such as ancient, classical, renaissance, and romantic, up to and including present. Also includes comparisons of form and theme to works from diverse cultural traditions, and an emphasis on verbal and written analysis of cultural and historical significance.
Prerequisite(s): WRT 102 or 108.
Offered: May not be offered this year, check class schedule.

LIT 278 Chicano Film and Literature
3 cr. hrs. 3 periods (3 lec.)
Survey of Chicano film and literature of the twentieth and twenty-first centuries. Includes emergence of the genre and critical analysis of film texts. Also examines how history prompted the development of Chicano film, social, and justice issues.
Prerequisite(s): WRT 102 or 108.
Offered: May not be offered this year, check class schedule.

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): WRT 102 or 108.
Offered: Fall, Spring.
Logistics and Supply Chain Management
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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, warehousmen and other logistics service providers. Also includes customer satisfaction, claim preparation, filing procedures, and claim dispute resolution.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall.

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.
Offered: Spring.

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.
Offered: Spring.

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.
Offered: Fall, Spring, Summer.
LGM 190 Logistics and Supply Chain Internship
3 cr. hrs. 11 periods (1 lec., 10 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.
Information: Students must complete 125 hours at a program-approved employer worksite.
Offered: Fall, Spring, Summer.

Machine Tool Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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, principles of metal cutting, bench and hand tools, power saws, drill presses, and abrasive machine.
Offered: Fall, Spring, Summer.

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.
Information: Prerequisite maybe waived with a score of 80% or better on the Machine Tool assessment test. See a machine tool instructor or advisor for prerequisite information.
Offered: Spring.

MAC 120 Machine Shop II
4 cr. hrs. 6 periods (2 lec., 4 lab)
Continuation of MAC 110. Includes a more in depth application of safety, lathes, milling machines, and grinding machines.
Prerequisite(s): MAC 110 or equivalent with department advisor approval.
Offered: Fall, Spring.

MAC 125 Mechanical Inspection
4 cr. hrs. 6 periods (2 lec., 4 lab)
Principles and applications of dimensional measurement. Includes line graduated measuring instruments, fixed gages, gauge blocks, comparative measurements, optical comparators and projectors, angle measurement, straightness, flatness, and perpendicularity measurement, and coordinated measuring machines.
Prerequisite(s): GTM 105, and MAC 110.
Information: Prerequisite maybe waived with industry experience. See a machine tool instructor for prerequisite information.
Offered: Fall, Spring.

MAC 130 Machine Setup and Fixture Making
3 cr. hrs. 5 periods (1 lec., 4 lab)
Concepts, techniques, and skills in machine setup. Includes how to translate blueprints into fixture making; the application of machine setup; and the making of fixtures.
Prerequisite(s): MAC 110.
Information: Prerequisite may be waived with industry experience. See a machine tool faculty instructor for prerequisite information.
Offered: Fall.

MAC 140 Introduction to Electrical Discharge Machining
4 cr. hrs. 6 periods (2 lec., 4 lab)
Application of electrical discharge machining (EDM) in industry today. Includes overview of EDM, EDM machines and processes, spark generation and dielectric fluids, electrodes, and surface finishes.
Prerequisite(s): MAC 110.
Information: Prerequisite maybe waived with Industry experience. See a machine tool instructor for prerequisite information.
Offered: Fall, Spring.
MAC 150 Computer Numerical Control (CNC) Mill Programming I  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Operations and procedures for automated machining systems. Includes Numerical Control (NC) and Computer Numerical Control (CNC) machining system, positioning and coordinate systems used in NC/CNC programming, part programming, diagnosis and correction of programming errors, and programming procedures.  
**Prerequisite(s):** GTM 105 and MAC 110.  
**Recommendation:** Completion of CAD 101 before enrolling in this course.  
**Information:** Industry experience may be substituted for prerequisite requirements. See a machine tool instructor for prerequisite information.  
**Offered:** Fall, Spring.

MAC 155 Computer Numerical Control (CNC) Mill Programming II  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Continuation of MAC 150. Includes review of Computer Numerical Control (CNC), mill programming, diagnosis and correction of programming errors, advanced programming techniques use in production and prototype machining, introduction to lathe programming, and introduction to sub-programming.  
**Prerequisite(s):** MAC 150.  
**Information:** Prerequisite maybe waived with industry experience. See a machine tool instructor for prerequisite information.  
**Offered:** Summer.

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:** Prerequisite maybe waived with industry experience. See a machine tool instructor for prerequisite information.  
**Offered:** Summer.

MAC 245 Wire Electrical Discharge Machining and Programming I  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Operations and procedures for EDM machining system. Includes wire EDM overview, EDM operating processes, EDM machine functions, EDM manual part programming, and EDM machining operations.  
**Prerequisite(s):** MAC 140, 150.  
**Offered:** Fall.

MAC 257 Computer Aided Machining I  
4 cr. hrs. 6 periods (2 lec., 4 lab)  
Computer Aided Machining (CAM) I Programming automated machine tools using Computer Aided Manufacturing (Mastercam) software. Includes review of Computer Numerical Control (CNC) and Computer Aided Drafting (CAD), introduction to a CAM environment, creating geometry, operating manager, and code generation.  
**Prerequisite(s):** MAC 155.  
**Information:** Prerequisite maybe waived with industry experience. See a machine tool instructor for prerequisite information.  
**Offered:** Fall, Summer.

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.  
**Offered:** Summer.

MAC 259 Computer Aided Machining (CAM) III: Solid Modeling  
4 cr. hrs. 7 periods (1 lec., 6 lab)  
Continuation of CAD 258. Includes profile surfaces of tool path, solid model features in three-dimension (3-D), and editing solid model surfaces.  
**Prerequisite(s):** MAC 258.  
**Offered:** Spring.

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.  
**Offered:** Fall, Spring.
MAC 296 Machine Tool Independent Projects
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 sixteen times for a maximum of sixteen credit hours.
*Information: Consent of instructor must be obtained before enrolling in this course.
Offered: Summer.

Management

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
*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.
*Recommendation: It is recommended that students complete MGT 110 before enrolling in this course.
Offered: Fall, Spring.

MGT 124 Small Business Management
3 cr. hrs. 3 periods (3 lec.)
Analysis of the practical problems of organizing, managing and starting a small business. Includes introduction and overview, selecting employees, forms of ownership, managing the business, business plan, pricing, managing cash flow, creating sales forecast, income statements, breakeven analysis, source of funds, international operations, contract, risk, and international opportunities.
Offered: Fall, Spring, Summer.

MGT 130 Improving Customer Service Quality
3 cr. hrs. 3 periods (3 lec.)
Exploration of customer service quality in a variety of product and service arenas. Includes customer/supplier interactions, quality indicators, costs of service quality, guidelines for quality service improvement, pitfalls or danger signs, service quality benchmarking process, variation, introductory tools for service quality improvement, and quality training.
*Recommendation: Completion of CSA 100 before enrolling in this course.
Offered: Spring.

MGT 210 Environmental Decisions for Business and Industry
3 cr. hrs. 3 periods (3 lec.)
Overview of environmental issues and related decisions pertaining to business and industry. Includes government relationships, the role of the business office, the design and engineering of buildings, case studies on operational decisions, entrepreneurial opportunities, and related ethics.
Offered: May not be offered this year, check class schedule.

MGT 230 Dynamics of Leadership
3 cr. hrs. 3 periods (3 lec.)
Training in leadership philosophy and application. Includes the changing nature of leadership, vision and mission, strategic planning, team building and group dynamics, managing conflict, anticipating and responding to change, complex systems, multiculturalism, ethics, power and privilege, self-assessment of leadership skills and characteristics, personal definition and philosophy, wellness and renewal, communication skills, presentation and facilitation skills, and designing and completing a leadership project.
*Information: Same as STU 230.
Offered: Fall, Spring.
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 CSA 101 or proficiency with Microsoft Office software before enrolling in this course.
Offered: Fall, Spring.

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.
Offered: Spring.

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.

Recommendation: Completion of BUS 100 and any other MGT course before enrolling in this course.
Offered: Fall, Spring.

MGT 284 Health Care Management
3 cr. hrs. 3 periods (3 lec.)
An overview of health care management to prepare supervisors and middle managers. Includes health care regulations, finance and related business issues, communication among the health care team members, supervision of staff, and planning and evaluating patient care management systems.

Recommendation: Completion of HCA 154 before enrolling in this course for students with no experience in the Health Care field.
Offered: May not be offered this year, check class schedule.

Marketing
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

MKT 100 Customer Service Skills
3 cr. hrs. 3 periods (3 lec.)
Overview of the behavior exhibited by successful customer service professionals featuring simulated business settings. Includes conventional behaviors of the workplace, professional communication in the customer service setting, grooming and clothing for a business setting, telephone and email service, effective answers to sales questions, punctuality and the work ethic, professionalism in the workplace, basic qualitative activities, behavior with co-workers, customer service challenges, exceptional customer service, and career advancement strategies in customer service.
Offered: Fall.

MKT 111 Principles of Marketing
3 cr. hrs. 3 periods (3 lec.)
Introduction to marketing principles and strategies. Includes developing a preliminary marketing plan, product strategy, pricing strategy, distribution of products/services, promotional strategies, relating the classification of consumer goods with the elements of the marketing mix, and the global marketplace.
Offered: Fall, Spring, Summer.

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.
Offered: Spring.

MKT 125 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.
Offered: Spring.
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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Information: May be taken three times for a maximum of nine credit hours.
Offered: Fall, Spring.

MKT 240 Fashion Merchandising Planning and Control
3 cr. hrs. 3 periods (3 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.
Prerequisite(s): MKT 140.
Information: Students who have experience in fashion retailing may have the prerequisite waived. See instructor for information.
Offered: Spring.

MKT 290 Apparel Merchandising Internship
3 cr. hrs. 15 periods (15 lab)
Volunteer apparel merchandising field experience at an approved work site. Includes development of a business plan, retail strategies, internship goals and evaluation, and report of day-to-day operations.
Prerequisite(s): MKT 240.
Information: Enrollment and placement contingent upon earned grade point average for students in their final semester of the Apparel Merchandising program. Application and acceptance required.
Offered: May not be offered this year, check class schedule.

Mathematics
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Information: MAT 082A, 082B, and 082C together constitute MAT 082.
Offered: Fall, Spring, Summer.

MAT 082A Basic Mathematics: Module A
1 cr. hrs. 1 periods (1 lec.)
 Constitutes approximately the first one-third of MAT 082.
Offered: May not be offered this year, check class schedule.

MAT 082B Basics Mathematics: Module B
1 cr. hrs. 1 periods (1 lec.)
 Constitutes approximately the second one-third of MAT 082.
Prerequisite(s): Within the last three years: MAT 082A with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.
MAT 082C Basic Mathematics: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of MAT 082.
Prerequisite(s): Within the last three years: MAT 082B with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

MAT 086 Prealgebra
3 cr. hrs. 3 periods (3 lec.)
Transition from arithmetic to algebra. Includes signed numbers, commutative, associative, and distributive laws, order of operations, algebraic expressions, polynomials, fractions, and linear equations. Also includes percents, ratio and proportion, graphing, perimeter, area, volume, and optional topics.
Prerequisite(s): Within the last three years: MAT 082 with a C or better or required score on the Mathematics assessment test.
Information: MAT 086A, 086B, and 086C together constitute MAT 086.
Information: Access to a scanner required for Math class taken online.
Offered: Fall, Spring, Summer.

MAT 086A Prealgebra: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of MAT 086.
Prerequisite(s): Within the last three years: MAT 082 with a C or better or required score on the Mathematics assessment test.
Offered: May not be offered this year, check class schedule.

MAT 086B Prealgebra: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of MAT 086.
Prerequisite(s): Within the last three years: MAT 086A with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

MAT 086C Prealgebra: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of MAT 086.
Prerequisite(s): Within the last three years: MAT 086B with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

MAT 089 Foundational Studies in Mathematics
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Fundamentals and applications of basic math, elementary algebra, and intermediate algebra.
Prerequisite(s): Math placement into MAT 082, 086, 092 or 122.
Information: Students with math recommendation into MAT 092 or below should enroll in this class. Students with math recommendation into MAT 122 can enroll in this class or MAT 122.
Information: The course content is offered in 35 modules which are computer delivered in a structured, individualized learning environment with on-demand instruction assistance. Attendance at regularly scheduled classes is required. To earn a passing grade, students must successfully complete a minimum of 9 modules.
Information: May be taken four times for a maximum of twelve credit hours-most students will take this course more than once.
Information: Access to a scanner required for Math classes taken online.
Offered: Fall, Spring, Summer.

MAT 092 Elementary Algebra
3 cr. hrs. 3 periods (3 lec.)
Introduction to basic algebra. Includes translating written statements into algebraic expressions, linear equations, linear inequalities, graphing, integer exponents, and polynomials. Also includes factoring, simple rational expressions, square roots, quadratic equations, and optional topics.
Prerequisite(s): Within the last three years: MAT 086 with a C or better or required score on the Mathematics assessment test.
Information: Access to a scanner required for Math classes taken online.
Information: MAT 092A, 092B, and 092C together constitute MAT 092.
Offered: Fall, Spring, Summer.

MAT 092A Elementary Algebra: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of MAT 092.
Prerequisite(s): Within the last three years: MAT 086 with a C or better or required score on the Mathematics assessment test.
Offered: May not be offered this year, check class schedule.
MAT 092B Elementary Algebra: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of MAT 092.
**Prerequisite(s):** Within the last three years: MAT 092A with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

MAT 092C Elementary Algebra: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of MAT 092.
**Prerequisite(s):** Within the last three years: MAT 092B with a C or better or concurrent enrollment.
Offered: May not be offered this year, check class schedule.

MAT 106 Elementary Data Analysis with Spreadsheets
2 cr. hrs. 2 periods (2 lec.)
Introduction to statistics. Includes the collection and presentation of data, statistical measures, algebra topics, Excel topics, and data analysis topics.
**Prerequisite(s):** Within the last three years: MAT 086 with a C or better or required score on the Mathematics assessment test.
Offered: Fall, Spring.

MAT 106A Elementary Data Analysis with Spreadsheets: Module A
1 cr. hrs. 1 periods (1 lec.)
Introduction to statistics. Includes the collection and presentation of data and statistical measures.
**Prerequisite(s):** Within the last three years: MAT 086 with a C or better, or required score on the Mathematics assessment test.
**Information:** MAT 106A and 106B together constitute MAT 106.
Offered: May not be offered this year, check class schedule.

MAT 106B Elementary Data Analysis with Spreadsheets: Module B
1 cr. hrs. 1 periods (1 lec.)
Continuation of MAT 106A. Includes algebra topics, Excel topics, and data analysis topics.
**Prerequisite(s):** Within the last three years: MAT 106A with a C or better or concurrent enrollment.
**Information:** MAT 106A and MAT 106B together constitute MAT 106.
Offered: May not be offered this year, check class schedule.

MAT 108 Practical Geometry and Trigonometry
2 cr. hrs. 2 periods (2 lec.)
Fundamentals of geometry and trigonometry with applications. Includes basic geometric properties, properties of triangles, Pythagorean Theorem and special triangles, polygons, circles, volumes, radian measure, trigonometric functions, and oblique triangles.
**Prerequisite(s):** Within the last three years: MAT 086 with a C or better or required score on the Mathematics assessment test.
**Information:** MAT 108A and 108B together constitute MAT 108.
Offered: Fall, Spring.

MAT 108A Practical Geometry and Trigonometry: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-half of MAT 108.
**Prerequisite(s):** Within the last three years: MAT 086 with a C or better or required score on the Mathematics assessment test.
**Information:** MAT 108A and 108B together constitute MAT 108.
Offered: May not be offered this year, check class schedule.

MAT 108B Practical Geometry and Trigonometry: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-half of MAT 108.
**Prerequisite(s):** Within the last three years: MAT 108A with a C or better or concurrent enrollment.
**Information:** MAT 108A and 108B together constitute MAT 108.
Offered: May not be offered this year, check class schedule.
MAT 122 Intermediate Algebra
3 cr. hrs. 3 periods (3 lec.)
Basic algebraic functions. Includes lines in the plane, systems of linear equations, inequalities, absolute value, polynomials, rational expressions and equations, and radical expressions and equations. Also includes quadratic equations, literal equations, exponents and logarithms, functions, and optional topics.
**Prerequisite(s):** Within the last three years: C or better in MAT 092 or satisfactory score on the mathematics assessment exam.
**Information:** No more than 3 credit hours can be applied toward graduation for MAT 122, 122Z and/or 123.
**Information:** Access to a scanner required for Math classes taken online.
**Information:** Not a university level course.
**Offered:** Fall, Spring, Summer.

MAT 122A Intermediate Algebra: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of MAT 122.
**Prerequisite(s):** Within the last three years: MAT 092 with a C or better or required score on the Mathematics assessment test.
**Information:** MAT 122A, 122B, and 122C together constitute MAT 122.
**Information:** Not a university-level course.
**Offered:** May not be offered this year, check class schedule.

MAT 122B Intermediate Algebra: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of MAT 122.
**Prerequisite(s):** Within the last three years: MAT 122A with a C or better or concurrent enrollment.
**Information:** MAT 122A, 122B, and 122C together constitute MAT 122.
**Information:** Not a university-level course.
**Offered:** May not be offered this year, check class schedule.

MAT 122C Intermediate Algebra: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of MAT 122.
**Prerequisite(s):** Within the last three years: MAT 122B with a C or better or concurrent enrollment.
**Information:** MAT 122A, 122B, and 122C together constitute MAT 122.
**Information:** Not a university-level course.
**Offered:** May not be offered this year, check class schedule.

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, and 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.
**Offered:** Fall, Spring.

MAT 142 Topics in College Mathematics
3 cr. hrs. 3 periods (3 lec.)
Survey of mathematical topics and applications. Includes application of mathematics to the social services, management science, growth, and probability and statistics.
**Prerequisite(s):** Within the last three years: MAT 122, 122Z, or 123 with a C or better, or required score on the Mathematics assessment test.
**Information:** Access to a scanner required for Math classes taken online.
**Offered:** Fall, Spring, Summer.
**MAT 144 College Algebra with Data Analysis**  
4 cr. hrs. 4 periods (4 lec.)  
College Algebra with an emphasis on data analysis. Includes functions, systems of equations, exponents and logarithms, power functions, polynomial functions, rates of change, descriptive statistics, regression, summation notation, spreadsheet software, and reports and projects.  
**Prerequisite(s):** Within the last three years: MAT 122, 122Z or 123 with a C or better, or required score on the mathematics assessment test.  
**Information:** Basic computer skills are required and may be attained through CSA 101 or 110 or 110A. See an advisor or mathematics faculty member for information.  
**Offered:** Fall, Spring.

**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 122, 122Z or 123 with a C or better, or satisfactory score on the Mathematics assessment exam.  
**Offered:** May not be offered this year, check class schedule.

**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.  
**Prerequisite(s):** Within the last three years: MAT 142 or 144 or 151 or higher with a C or better, or mathematics assessment into MAT 167 or higher.  
**Information:** Access to a scanner required for math classes taken online.  
**Offered:** Fall, Spring.

**MAT 147 Mathematics for Elementary Teachers II**  
3 cr. hrs. 3 periods (3 lec.)  
Continuation of MAT 146. Includes measurement, basic geometry, probability, and statistics. Also includes the technology to teach mathematics.  
**Prerequisite(s):** Within the last three years: MAT 146 with a C or better.  
**Information:** Access to a scanner required for math classes taken online.  
**Offered:** Fall, Spring.

**MAT 151 College Algebra SUN# MAT 1151**  
4 cr. hrs. 4 periods (4 lec.)  
Introduction to college-level algebra. Includes functions, polynomial and rational functions, exponential and logarithmic functions, linear 2 x 2 and higher systems, graphing, sequences and series, and calculator use.  
**Prerequisite(s):** Within the last three years: MAT 122, 122Z, or 123 with a C or better, or required score on the Mathematics assessment test.  
**Information:** Students taking two or three of the following courses in any combination will receive a maximum of 7 credits toward graduation: MAT 151, 182 and 187.  
**Information:** A graphing calculator is required. See your instructor for details.  
**Information:** Access to a scanner required for Math classes taken online.  
**Offered:** Fall, Spring, Summer.

**MAT 151A College Algebra: Module A**  
1 cr. hrs. 1 periods (1 lec.)  
Constitutes approximately the first one-fourth of MAT 151.  
**Prerequisite(s):** Within the last three years: MAT 122 with a C or better or required score on the Mathematics assessment test.  
**Information:** MAT 151A, 151B, 151C, and 151D together constitute MAT 151.  
**Information:** A graphing calculator is required. See your instructor for details.  
**Offered:** May not be offered this year, check class schedule.

**MAT 151B College Algebra: Module B**  
1 cr. hrs. 1 periods (1 lec.)  
Constitutes approximately the second one-fourth of MAT 151.  
**Prerequisite(s):** Within the last three years: MAT 151A with a C or better or concurrent enrollment.  
**Information:** MAT 151A, 151B, 151C, and 151D together constitute MAT 151.  
**Information:** A graphing calculator is required. See your instructor for details.  
**Offered:** May not be offered this year, check class schedule.
MAT 151C College Algebra: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-fourth of MAT 151.
Prerequisite(s): Within the last three years: MAT 151B with a C or better or concurrent enrollment.
Information: MAT 151A, 151B, 151C, and 151D together constitute MAT 151.
Information: A graphing calculator is required. See your instructor for details.
Offered: May not be offered this year, check class schedule.

MAT 151D College Algebra: Module D
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the fourth one-fourth of MAT 151.
Prerequisite(s): Within the last three years: MAT 151C with a C or better or concurrent enrollment.
Information: MAT 151A, 151B, 151C, and 151D constitute MAT 151.
Information: A graphing calculator is required. See your instructor for details.
Offered: May not be offered this year, check class schedule.

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 144 or 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.
Offered: Fall, Spring, Summer.

MAT 172 Finite Mathematics
3 cr. hrs. 3 periods (3 lec.)
Mathematics for students majoring in business. Includes set theory, partitions, permutations, combinations, probability, Bernoulli trials, Markov chains and the simplex method of linear programming.
Prerequisite(s): Within the last three years: C or better in MAT 144 or 151 or required score on the mathematics assessment test.
Offered: Fall.

MAT 173 Mathematics for Business I
3 cr. hrs. 3 periods (3 lec.)
Introduction to business finite mathematics. Includes basic probability, summation, conditional probability and independence, Bayes’ Theorem, compound interest, random variables, random sampling, and computer skills.
Prerequisite(s): Within the last three years: a C or better in either MAT 144 or in a combination of MAT 151 (or required score on mathematics assessment exam) and CSA 110 or 110A.
Information: Basic knowledge of Excel is required and can be met through MAT 144, or CSA 110 or 110A. See a mathematics faculty member for information.
Offered: Fall, Spring, Summer.

MAT 174 Mathematics for Business II
3 cr. hrs. 3 periods (3 lec.)
Continuation of MAT 173. Includes distributions, normal distributions, basic statistics, integration, common business functions, differentiation, and computer skills.
Prerequisite(s): Within the last three years: MAT 173 with a C or better.
Offered: Fall, Spring, Summer.

MAT 182 Trigonometry
3 cr. hrs. 3 periods (3 lec.)
Introduction to trigonometric functions. Includes graphs, identities, angle measure, vectors, polar coordinates, and conic sections.
Prerequisite(s): Within the last three years: MAT 151 with a C or better or required score on the Mathematics assessment test.
Information: Students taking two or three of the following courses in any combination will receive a maximum of 7 credits toward graduation: MAT 151, 182 and 187.
Information: Access to a scanner required is for math classes taken online.
Offered: Fall, Spring, Summer.
MAT 187 Precalculus  SUN# MAT 1187  
5 cr. hrs. 5 periods (5 lec.)
College-level algebra and trigonometry. Includes equations, algebraic and transcendental functions, inequalities, systems of equations, conic sections, sequences and series, trigonometric functions, polar form, calculator use, and partial fractions. Also includes intensive preparation for analytic geometry and calculus.
Prerequisite(s): Within the last three years: MAT 122 with a B or better, or required score on the Mathematics assessment test.
Recommendation: Fast-paced course for motivated students who have strong algebra skills and some trigonometry background.
Information: Students taking two or three of the following courses in any combination will receive a maximum of 7 credits toward graduation: MAT 151, 182 and 187.
Offered: Fall, Spring, Summer.

MAT 212 Topics in Calculus  
3 cr. hrs. 3 periods (3 lec.)
Calculus for students majoring in business. Includes limits, continuity, differentiation and integration of algebraic functions.
Prerequisite(s): Within the last three years: MAT 144 or 151 with a C or better or required score on the Mathematics assessment test.
Offered: Fall, Spring, Summer.

MAT 220 Calculus I  SUN# MAT 2220  
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 151 and 182, or MAT 187 with a C or better, or required score on the Mathematics assessment exam.
Information: Access to a scanner required for Math classes taken online.
Offered: Fall, Spring, Summer.

MAT 227 Discrete Mathematics in Computer Science  SUN# MAT 2227  
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.
Offered: May not be offered this year, check class schedule.

MAT 231 Calculus II  SUN# MAT 2230  
4 cr. hrs. 4 periods (4 lec.)
Continuation of MAT 220. Includes techniques and applications of integration, numerical integration, improper integrals, separable integrals, separable differential equations, sequences, infinite series, and other related topics.
Prerequisite(s): Within the last three years: MAT 220 with a C or better.
Offered: Fall, Spring, Summer.

MAT 241 Calculus III  SUN# MAT 2241  
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 C or better.
Offered: Fall, Spring.

MAT 252 Introduction to Linear Algebra  
3 cr. hrs. 3 periods (3 lec.)
Prerequisite(s): Within the last three years: MAT 231 with a C or better.
Offered: Fall, Spring.

MAT 262 Differential Equations  SUN# MAT 2262  
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.
Offered: Fall, Spring, Summer.
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.
Offered: May not be offered this year, check class schedule.

Medical Assistant
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MDA 120 Medical Assistant Profession
2 cr. hrs. 2 periods (2 lec.)
Overview of current health care professions including career and labor market information, delivery systems, third party payers, and facility ownership. Includes health organization structure, patient rights and quality care, and life values. Includes values, ethics, behaviors in the workplace, worker rights and responsibilities, and OSHA. Includes nutrition, stress management, safety requirements, and daily living activities. Also includes basic communication skills, teamwork facilitation, development of personal communication skills and intercultural communication strategies.
Offered: Contact department at 206-5100.

MDA 121 Medical Assistant Skills for Success
2 cr. hrs. 2 periods (2 lec.)
Medical assistant college success tools, skills, and community resources, personal, academic, time management, self-esteem, stress management techniques, gender awareness, assertiveness training, critical thinking skills, job development, and portfolio development. Also includes theory and practice of computer keyboarding.
Offered: Contact department at 206-5100.

MDA 122 Medical Assistant Clinical Care
2 cr. hrs. 3 periods (1 lec., 2 lab)
Multi-skilled approach to patient care. Includes legal and ethical responsibility, asepsis, dressing changes, electrocardiograms, phlebotomy, specimen collection and handling, urinalysis, whole blood hematology, glucose monitoring, cholesterol and coagulation testing. Includes compliance with Occupational Health and Safety Administration (OSHA) and the Clinical Laboratory Improvement Amendments (CLIA) regulations. Also includes principles of medication administration with an emphasis on oral and parenteral routes of drug administration.
Offered: Contact department at 206-5100.

MDA 123 Medical Assistant Clinical Procedures
3 cr. hrs. 4 periods (2 lec., 2 lab)
Principles and procedures for the medical assistant. Includes methods of assisting clinicians with physical examinations, procedures, treatments, and minor surgical procedures in the medical office. Also includes collection of vital signs, height and weight, patient data, and appropriate documentation.
Offered: Contact department at 206-5100.

MDA 124 Medical Terminology for Health Care Workers
2 cr. hrs. 2 periods (2 lec.)
Medical terminology used in health care, with special care populations and in special services. Includes body systems approach to terms related to structures, functions, diseases, procedures, and diagnostic tests. Includes building and analyzing terms using word parts. Also includes medical abbreviations and symbols and term spelling.
Offered: Contact department at 206-5100.

MDA 125 Orientation to ICD-9 Coding
3 cr. hrs. 4 periods (2 lec., 2 lab)
Orientation to the International Classification of Diseases - 9th Edition (ICD-9) coding classification system. Includes terminology, principles and components of the ICD-9 coding system, codes for diseases and conditions, information from health records, and coding for highest specificity.
Recommendation: MDA 121 and 124, and minimum 25 words per minute word processing skills.
Offered: Contact department at 206-5100.

MDA 126 Medical Billing and Insurance for Medical Assistants
3 cr. hrs. 4 periods (2 lec., 2 lab)
Application of insurance, coding and billing. Includes legal and ethical issues, federal, state and private insurance claims, procedural and diagnostic coding, and banking and accounting principles.
Recommendation: Minimum 25 words per minute word processing skills.
Offered: Contact department at 206-5100.
MDA 127 Administrative Procedures for Medical Assistants
3 cr. hrs. 4 periods (2 lec., 2 lab)
Principles and procedures for front office administrative skills. Includes methods of telephone management, correspondence and mail processing, appointment scheduling, medical records management and data collection. Also includes an overview of medical assistant as an office manager.
Offered: Contact department at 206-5100.

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 and MDA 120, 121, 124, 125, 126, 127.
Information: Permission of the program director is required to enroll in this course.
Offered: Contact department at 206-5100.

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 and MDA 120, 121, 122, 123, 124.
Information: Permission of the program director is required to enroll in this course.
Offered: Contact department at 206-5100.

Medical Laboratory Technician
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MLT 101 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 201IN or 202IN.
Offered: Fall.

MLT 110 Techniques and Mathematics for the Laboratory
2 cr. hrs. 2 periods (2 lec.)
Introduction to the use of proper techniques and mathematical calculations in a laboratory setting. Includes safety, laboratory mathematics, and ancillary equipment and instruments.
Prerequisite(s): MAT 092 or required score on assessment test, and CHM 080 or 130 or placement into CHM 151.
Information: Same as BIO 110.
Offered: May not be offered this year, check class schedule.

MLT 199 Introduction to Co-op: Phlebotomy Lab Assisting
1 cr. hrs. 1 periods (1 lec.)
Principles of job success. Includes laboratory workplace skills, communication skills, time and energy management, managing stress, career information, placing yourself on the job market, principles, theories, and practices in the career field, and problems in the work situation.
Prerequisite(s): MLT 101.
Corequisite(s): MLT 199WK.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.

MLT 199WK Co-op Work: Phlebotomy Lab Assisting
1.25 cr. hrs. 6.25 periods (6.25 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, or outpatient collection station. The student develops competency and improved self confidence in the laboratory workplace.
Prerequisite(s): MLT 101.
Corequisite(s): MLT 199.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.
MLT 200 Urinalysis/Body Fluids
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to the fundamental techniques in urinalysis and body fluids. Includes urine collection, physical and chemical examination of urine, microscopic examination of urine, body fluids, and phlebotomy review.
Offered: Fall.

MLT 211 Hematology
5 cr. hrs. 7 periods (4 lec., 3 lab)
The study of human blood cells, red cells, white cells, and platelets looking at structure, formation and the diseases associated with these cells. Includes types of blood cells, tests, normal white cells in peripheral blood, blood cell maturation, and normal and abnormal white and red blood cells. Also includes disease states, hemoglobins, facets of hemostasis, coagulation mechanism and abnormalities, the fibrinolytic system, instrumentation, and quality controls and quality insurance.
Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.
Offered: Spring.

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.
Offered: Spring.

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.
Information: Students must be admitted to the Medical Laboratory Technician program or obtain consent of instructor before enrolling in this course.
Offered: Fall.

MLT 251 Clinical Microbiology
5 cr. hrs. 9 periods (3 lec., 6 lab)
Introduction to the structure, identification, and control of bacteria. Includes categories/classification of bacteria, ecology and spread of bacteria, pathogenesis of bacterial infection, clinical bacteriology methodology, various organisms, clinically significant anaerobic bacteria, and methods in antimicrobial testing, fungi, and viruses and other microorganisms.
Information: The emphasis in this course is on bacteria of medical importance with respect to their cultivation, isolation, and pathogenicity. Through laboratory experience, the student develops techniques of specimen collection and processing, culture, staining, biochemical testing, and antibiotic susceptibility testing.
Offered: Fall.

MLT 260 Parasitology
3 cr. hrs. 5 periods (2 lec., 3 lab)
Introduction to the basics of parasite and host relationships and their effects. Includes specimen collection, techniques for stool examination, special techniques, use of other specimens, procedures for detecting blood and tissue parasites, diagnosis of parasitic infections, clinically important parasites, and quality assurance. Also includes introduction to immunology and serological testing for autoimmune and infectious diseases.
Offered: Spring.

MLT 299 Introduction to Co-op: Medical Laboratory Technician
1 cr. hrs. 1 periods (1 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 101, 199/199WK, 200, 211, 221, 231, 251, 260.
Corequisite(s): MLT 299WK.
Information: Consent of instructor is required before enrolling in this course.
Offered: Fall, Spring.
MLT 299WK Co-op Work: Medical Laboratory Technician  
8 cr. hrs. 40 periods (40 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 101, 199/199WK, 200 211, 221, 231, 251, 260.  
Corequisite(s): MLT 299.  
Information: Consent of instructor is required before enrolling in this course.  
Offered: Fall, Spring.

 Mexican-American Studies  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MAS 201 La Chicana  
3 cr. hrs. 3 periods (3 lec.)  
Interdisciplinary analysis of Chicanas/Mexicanas status in the United States. Includes interdisciplinary analysis of Chicanas/Mexicanas in the U.S., Chicana/Mexicana interdisciplinary scholarship and Social Justice Movements, and Chicana/Mexicana feminism in the Southwest, Chicana/Mexicana community empowerment, and Chicanas/Mexicanas on the U.S.-Mexico border.  
Information: Same as WST 201.  
Offered: Fall, Spring.

MAS 208 United States-Mexico Borderlands  
3 cr. hrs. 3 periods (3 lec.)  
Study of the U.S-Mexico borderlands. Includes a historical overview from the border's origins in the U.S.-Mexico War and the Treaty of Guadalupe Hidalgo and a comprehensive review of the most significant events and issues of the mid-20th Century to the present. Also includes geography, sociodemographics, political economy, migration and transmigrants, media representations, U.S. border policies, enforcement and in/security, violence and peace, gender and sexuality, U.S-Mexico relations, and popular culture.  
Offered: Fall, Spring.

MAS 265 Survey of Mexican-American Studies  
3 cr. hrs. 3 periods (3 lec.)  
Interdisciplinary analysis of current issues salient to the Chicana/o population in the United States. Includes analysis of Chicanas/os in the U.S., Chicana/o and Mexican interdisciplinary scholarship and social justice movements, and Chicanas/os and Mexican migration to the U.S.  
Offered: May not be offered this year, check class schedule.

Music  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MUS 052 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 (treble and bass clef), visual and aural recognition of intervals, and dictation and performance of simple rhythmic patterns. Also includes sight singing of simple melodies, identifying major and minor key signatures and scales, singing of major and minor scales, and intervals. Also includes aural identification of individual pitches within major scales, and listening to short melodic figures and playing them back on keyboards.  
Recommendation: Students considering music as a major are encouraged to take MUS 052 and 102 concurrently.  
Offered: Fall, Spring.

MUS 055 Introduction to Piano  
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, repertory pieces, technique and finger strength, and learning and practice methods. Also includes transposition of simple compositions, sight reading, and harmonizations of melodies.  
Offered: Fall, Spring.
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.
Offered: Fall, Spring.

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.
Offered: May not be offered this year, check class schedule.

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, notation, rhythm and meter, intervals, scales and transposition, key signatures, and triads. Also includes specific size of intervals, chords and harmony, simple forms, and analyzing music.
Recommendation: Students considering music as a major are encouraged to concurrently enroll in MUS 052 and 102.
Offered: Fall, Spring.

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 three times for a maximum of three credit hours.
Offered: Fall, Spring.

MUS 108 Pima Jazz Band
2 cr. hrs. 3 periods (1 lec., 2 lab)
Rehearsal and performance of many styles of music in the jazz idiom. Includes progressive development of musical skills through interpretation of literature.
Information: Students chosen by audition.
Information: May be taken ten times for a maximum of twenty credit hours, but a maximum of three credits will apply toward the AGEC.
Offered: Fall, Spring.

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, and style. Also includes global topics of arts in education and society and historical/stylistic trends through the evolution of keyboard instruments and composition.
Offered: Fall, Spring.

MUS 116 Pima Community College Orchestra
2 cr. hrs. 3 periods (1 lec., 2 lab)
Progressive development of musical skills through interpretation of orchestra literature. Includes participation in regular rehearsals and performances.
Information: Students chosen by audition.
Information: May be taken ten times for a maximum of twenty credit hours.
Offered: Fall, Spring.

MUS 120 Concert Band
3 cr. hrs. 7 periods (1 lec., 6 lab)
Progressive development of musical skills through interpretation of literature. Includes participation in regular rehearsals and performances.
Information: Students chosen by audition.
Information: May be taken ten times for a maximum of thirty credit hours.
Offered: Fall, Spring.
MUS 125 Structure of Music I
3 cr. hrs. 3 periods (3 lec.)
Review of music fundamentals. Includes form and analysis, nonharmonic 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, modulation by common chord, secondary dominants and chorale harmonizations.
Information: Required for all other music structure courses.
Information: Students who are music majors take MUS 125 and 127 concurrently.
Information: Music majors must also concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Fall, Spring.

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, large forms and genres, 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.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Spring, Summer.

MUS 127 Aural Perception I
2 cr. hrs. 2 periods (2 lec.)
Development of aural techniques. Includes rhythmic dictation, intervallic recognition, sight singing, rhythmic performance, and clapping and counting rhythms.
Information: Required for all other music aural perception courses.
Information: Students who are music majors take MUS 125 and 127 concurrently.
Information: Music majors must also concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Fall, Spring.

MUS 129 Aural Perception II
2 cr. hrs. 2 periods (2 lec.)
Continuation of MUS 127. Includes aural approaches to chromatic harmony, melody, and associated structures, and advanced applications for rhythmic dictation, intervallic recognition, and general listening techniques.
Prerequisite(s): MUS 127.
Corequisite(s): MUS 126.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Spring, Summer.

MUS 130 Chorale (SATB)
3 cr. hrs. 4 periods (2 lec., 2 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 ten times for a maximum of thirty credit hours.
Offered: Fall, Spring.

MUS 131 College Singers (SATB)
3 cr. hrs. 4 periods (2 lec., 2 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.
Information: May be taken ten times for a maximum of thirty credit hours.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.
MUS 137 Voice Class II  
2 cr. hrs. 2 periods (2 lec.)  
Continuation of MUS 136. Includes skills and techniques, individual voice lessons and demonstrations, and presentations of assigned literature.  
Prerequisite(s): MUS 136.  
Offered: May not be offered this year, check class schedule.

MUS 141 Piano Class I (Majors)  
2 cr. hrs. 2 periods (2 lec.)  
Beginning instruction employing group and individual techniques in an electronic lab situation. Includes scales, chords, repertoire, technique, practice habits, transposition of single-line melodies, and sight-reading.  
Offered: Fall, Spring.

MUS 142 Piano Class II (Majors)  
2 cr. hrs. 2 periods (2 lec.)  
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.  
Offered: Spring, Summer.

MUS 143 Piano Class III (Majors)  
2 cr. hrs. 2 periods (2 lec.)  
Continuation of MUS 142. Incorporates intermediate piano instruction utilizing group and individual practice with electronic pianos. Includes scales, chords, arpeggios, harmonizations of major and minor pieces, transposition of pieces, repertoire pieces, technique and practice habits, sight reading, and score reading.  
Prerequisite(s): MUS 142.  
Offered: Fall.

MUS 144 Piano Class IV (Majors)  
2 cr. hrs. 2 periods (2 lec.)  
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.  
Offered: Spring.

MUS 148 Musical Theater Workshop  
2 cr. hrs. 3 periods (1 lec., 2 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 four times for a maximum of eight credit hours.  
Information: Students chosen by audition.  
Offered: Fall.

MUS 149 Opera Workshop  
2 cr. hrs. 3 periods (1 lec., 2 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 four times for a maximum of eight credit hours.  
Information: Student chosen by audition.  
Offered: Spring.

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 era, classics, and the Nineteenth and Twentieth centuries.  
Offered: Fall, Spring.

MUS 154 Jazz Improvisation  
2 cr. hrs. 2 periods (2 lec.)  
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: Students chosen by audition.  
Information: May be taken ten times for a maximum of twenty credit hours.  
Offered: Fall, Spring.
MUS 155 Introduction to Electronic Music I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to producing music with Musical Instrument Digital Interface (MIDI) configurations and WAV sounds. Includes concepts in acoustics and music synthesis, use of hardware and software, music notation software, music sequencing software, and documentation of projects. Also includes computers, printers, and keyboard controller.

Recommendation: Ability to read music before enrolling in this course.
Offered: Fall, Spring, Summer.

MUS 156 Introduction to Electronic Music II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of MUS 155. Includes song data entry from computer synthesizer keyboards, editor/library, and percussion writing.

Prerequisite(s): MUS 155.
Offered: Spring.

MUS 157 Music Industry I: Marketing, Merchandising and the Law
3 cr. hrs. 3 periods (3 lec.)
Operation, scope, and career opportunities in the music business. Includes music in the marketplace, professional songwriting and music composition, music copyright and publishing, business affairs in the music industry, and application of information.
Offered: Fall.

MUS 158 Music Industry II: Music in Recording and Mass Media
3 cr. hrs. 3 periods (3 lec.)
Operation, scope, and career opportunities in the music business. Includes focus on the record industry, environmental music, uses of music in radio, telecommunications and film, and career options.
Offered: Spring.

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.
Offered: Fall.

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.
Offered: Fall.

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.
Offered: Spring.

MUS 203 Popular Music Styles
3 cr. hrs. 3 periods (3 lec.)
Introduction to the fundamentals of popular music styles. Includes formal elements of a popular song, chords and progressions, rhythm and arrangement styles, song forms, lead sheets, and connections of lyrics and vocals. Also includes instrumental sections, historical roots, standard rhythmic writing, and scoring.

Prerequisite(s): MUS 102 or 125 or consent of instructor.
Offered: Spring.
MUS 223 Structure of Music III  SUN# MUS 2222*
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.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Fall.

MUS 224 Aural Perception III  SUN# MUS 2222*
2 cr. hrs. 2 periods (2 lec.)
Continuation of MUS 129. Includes scales, intervallic recognition, melodic dictation of melodies, chord type identification, rhythmic dictation and performing notated rhythms, syncopated rhythms, and sight singing melodies. Also includes motives and motivic development, themes and thematic development, and conducting while performing various rhythms and melodies.
Prerequisite(s): MUS 129.
Corequisite(s): MUS 223.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Fall.

MUS 226 Structure of Music IV  SUN# MUS 2223**
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.
Prerequisite(s): MUS 223.
Corequisite(s): MUS 228.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time music faculty member for additional information.
Offered: Spring.

MUS 228 Aural Perception IV  SUN# MUS 2223**
2 cr. hrs. 2 periods (2 lec.)
Continuation of MUS 224. Includes scales and modes, intervallic recognition, melodic dictation, chord type identification, chord progressions, modulation types rhythmic dictation, and syncopated rhythms, cross-rhythms, hemiola, and asymmetrical meter. Also includes sight singing melodies, motives and motivic development, themes and thematic development, and conducting while performing various rhythms and melodies.
Prerequisite(s): MUS 224.
Corequisite(s): MUS 226.
Information: Music majors must concurrently enroll in the appropriate level of studio instruction course. Consult a full time faculty member for additional information.
Offered: Spring.

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.
Offered: Fall, Spring.

MUS 296 Independent Studies in Music
1-3 cr. hrs. 3-9 periods (1-3 lec., 2-6 lab)
In-depth study in an area of the student's choice with approval by the supervising instructor.
Information: May be taken four times for a maximum of four credit hours.
Offered: May not be offered this year, check class schedule.

*Both MUS 223 and 224 must be completed in order to get the MUS 2222 SUN designation.
**Both MUS 226 and 228 must be completed in order to get the MUS 2223 SUN designation.
Music Studio Instruction

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MUP 061 Studio Instruction: Brass (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
Information: Audition as a music major. 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.
Offered: Fall, Spring.

MUP 062 Studio Instruction: Guitar (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills to be stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.

MUP 063 Studio Instruction: Percussion (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.

MUP 064 Studio Instruction: Piano (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.

MUP 065 Studio Instruction: Strings (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.

MUP 066 Studio Instruction: Voice (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.

MUP 067 Studio Instruction: Woodwinds (Pre Major)
2 cr. hrs. 4 periods (4 lab)
Weekly studio instruction. Course of study jointly determined by the instructor and student. Development of performance skills is stressed.

Corequisite(s): (MUS 052 and 102) or (MUS 125 and 127).
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.
Offered: Fall, Spring.
MUP 161 Studio Instruction: Brass I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 162 Studio Instruction: Guitar I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 163 Studio Instruction: Percussion I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 164 Studio Instruction: Piano I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 165 Studio Instruction: Strings I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 166 Studio Instruction: Voice I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 167 Studio Instruction: Woodwinds I (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 168 Studio Instruction I: (Major)  
2 cr. hrs. 4 periods (4 lab)  
Weekly studio instruction. Includes participation in student recitals and jury exams.  
Corequisite(s): MUS 125, MUS 127.  
Information: Students chosen by audition.  
Offered: Fall, Spring.

MUP 171 Studio Instruction: Brass II (Major)  
2 cr. hrs. 4 periods (4 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.  
Offered: Fall, Spring.
MUP 172 Studio Instruction: Guitar II (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 173 Studio Instruction: Percussion II (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 174 Studio Instruction: Piano II (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 175 Studio Instruction: Strings II (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 176 Studio Instruction: Voice II (Major)
2 cr. hrs. 4 periods (4 lab)
Continuation of MUP 166. Private weekly instrumental 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.
Offered: Fall, Spring.

MUP 177 Studio Instruction: Woodwinds II (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 178 Studio Instruction II: (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 261 Studio Instruction: Brass III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.
MUP 262 Studio Instruction: Guitar III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 263 Studio Instruction: Percussion III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 264 Studio Instruction: Piano III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 265 Studio Instruction: Strings III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 266 Studio Instruction: Voice III (Major)
2 cr. hrs. 4 periods (4 lab)
Continuation of MUP 176. Private weekly instrumental 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.
Offered: Fall, Spring.

MUP 267 Studio Instruction: Woodwinds III (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 268 Studio Instruction III: (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 271 Studio Instruction: Brass IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.
MUP 272 Studio Instruction: Guitar IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 273 Studio Instruction: Percussion IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 274 Studio Instruction: Piano IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 275 Studio Instruction: Strings IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 276 Studio Instruction: Voice IV (Major)
2 cr. hrs. 4 periods (4 lab)
Continuation of MUP 266. Private weekly instrumental 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.
Offered: Fall, Spring.

MUP 277 Studio Instruction: Woodwinds IV (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.

MUP 278 Studio Instruction IV: (Major)
2 cr. hrs. 4 periods (4 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.
Offered: Fall, Spring.
Nursing

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

NRS 104 Nursing Process I
4 cr. hrs. 4 periods (4 lec.)
Nursing 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: (1) a safe practitioner, (2) an effective communicator, (3) a manager/teacher, (4) a culturally competent/caring healthcare provider, and (5) 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 acute-care, long term care and community environments.

Corequisite(s) or Prerequisite(s): WRT 101.
Corequisite(s): HCA 102, HCA 155, NRS 104LC, NRS 104LS.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.
Offered: Fall, Spring.

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) or Prerequisite(s): WRT 101.
Corequisite(s): HCA 102, HCA 155, NRS 104, NRS 104LS.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.
Offered: Fall, Spring.

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) or Prerequisite(s): WRT 101.
Corequisite(s): HCA 102, HCA 155, NRS 104, NRS 104LC.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.
Offered: Fall, Spring.

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: (1) safe practitioner, (2) effective communicator, (3) manager/teacher, (4) a culturally competent/caring healthcare provider, and (5) professional and ethical issues of being a nurse. Includes additional application of theory in the college laboratory and the clinical setting in acute care environments.

Prerequisite(s): HCA 102, 155, NRS 104, 104LC, 104LS, WRT 101.
Corequisite(s) or Prerequisite(s): BIO 205IN, ECE 107 or PSY 240.
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.
Offered: Fall, Spring.

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 102, 155, NRS 104, 104LC, 104LS, WRT 101.
Corequisite(s) or Prerequisite(s): BIO 205IN, ECE 107 or PSY 240.
Corequisite(s): NRS 105, NRS 105LS.
Offered: Fall, Spring.

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 102, 155, NRS 104, 104LC, 104LS, WRT 101.
Corequisite(s) or Prerequisite(s): BIO 205IN, ECE 107 or PSY 240.
Corequisite(s): NRS 105, NRS 105LC.
Offered: Fall, Spring.
NRS 180 Transition to Practical Nursing  
2 cr. hrs. 2 periods (2 lec.)  
Theoretical and clinical preparation to qualify the student to apply for licensure by the Arizona State Board of Nursing as a Practical Nurse (LPN). Includes application of the nursing process in the care of the childbearing family, the pediatric client and the client experiencing alterations in mental health and cognitive functioning. Also includes additional clinical laboratory application of selected nursing skills and knowledge in the care of the developing family and child. Also includes the role of the LPN in relation to the nursing process.  
**Prerequisite(s):** BIO 205, ECE 107 or 117, HCA 102, 155, NRS 104, concurrent enrollment or completion of NRS 105, and WRT 101.  
**Corequisite(s):** NRS 180LC.  
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

NRS 180LC Transition to Practical Nursing Lab  
.5 cr. hrs. 1.5 periods (1.5 lab)  
This is the clinical lab portion of NRS 180.  
**Prerequisite(s):** BIO 205, ECE 107 or ECE 117, HCA 102, HCA 155, NRS 104, concurrent enrollment or completion of NRS 105, WRT 101.  
**Corequisite(s):** NRS 180.  
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course.  
Offered: May not be offered this year, check class schedule.

NRS 188 Transition to Associate Degree Nursing  
4 cr. hrs. 4 periods (4 lec.)  
Non-clinical course facilitating transition of the Licensed Practical Nurse (LPN) into the Pima Community College Associate Degree Nursing program. Includes role transition through the application of the nursing process and orients the student to the philosophy, major concepts and program outcomes of the ADN program, and focuses on adult clients experiencing selected health alterations.  
**Corequisite(s) or Prerequisite(s):** BIO 205IN, ECE 107 or PSY 240.  
**Corequisite(s):** NRS 188LS.  
Information: In order to enroll in this course, the student must hold a current valid Licensed Practical Nurse (LPN) license in Arizona. The student must also meet all admission criteria for the Associate Degree Nursing Program and obtain consent of the Nursing Department before enrolling in this course.  
Offered: Fall, Spring.

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.  
**Corequisite(s) or Prerequisite(s):** BIO 205IN, ECE 107 or PSY 240.  
**Corequisite(s):** NRS 188.  
Information: In order to enroll in this course, the student must hold a current valid Licensed Practical Nurse (LPN) license in Arizona. The student must also meet all admission criteria for the Associate Degree Nursing Program and obtain consent of the Nursing Department before enrolling in this course.  
Offered: Fall, Spring.

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.  
Offered: May not be offered this year, check class schedule.

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.  
**Prerequisite(s):** BIO 205IN, ECE 107 or PSY 240, NRS 105, 105LC, 105LS.  
**Corequisite(s) or Prerequisite(s):** BIO 127IN or FSN 127, WRT 102.  
**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.  
Offered: Fall, Spring, Summer.
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 205IN, ECE 107 or PSY 240, NRS 105, 105LC, 105LS.
Corequisite(s) or Prerequisite(s): BIO 127IN or FSN 127, WRT 102.
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.
Offered: Fall, Spring, Summer.

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. Includes further development of performance behaviors that will serve as the basis of effective nursing practice: (1) safe practitioner, (2) effective communicator, (3) manager/teacher, (4) culturally competent/caring health care provider, (5) 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 127IN or FSN 127IN, NRS 201, NRS 201LC, WRT 102.
Corequisite(s): NRS 202, NRS 202CA, NRS 202CB, NRS 203.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. Involves student completion of a five-week preceptorship in an assigned healthcare setting.
Offered: Fall, Spring.

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 127IN or FSN 127IN, NRS 201, 201LC, WRT 102.
Corequisite(s): NRS 202, NRS 202CB, NRS 203.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. Involves student completion of a five-week preceptorship in an assigned healthcare setting.
Offered: Fall, Spring.

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 127IN or FSN 127IN, NRS 201, 201LC, WRT 102.
Corequisite(s): NRS 202, NRS 202CA, NRS 203.
Information: Students must be admitted to the PCC Nursing program and obtain consent of the Nursing Department before enrolling in this course. Involves student completion of a five-week preceptorship in an assigned healthcare setting.
Offered: Fall, Spring.

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 127IN or FSN 127IN, NRS 201, 201LC, WRT 102.
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.
Offered: Fall, Spring.

Nursing Assistant
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

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 a score of 85 or higher on the Compass Reading Assessment test.
Corequisite(s): NRA 101LC, NRA 101LS.
Information: Students must obtain consent from the Nursing Department before enrolling in this course.
Offered: Fall, Spring.
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 a score of 85 or higher on the Compass Reading Assessment test.
Corequisite(s): NRA 101, NRA 101LS.
Offered: Fall, Spring.

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 a score of 85 or higher on the Compass Reading Assessment test.
Corequisite(s): NRA 101, NRA 101LC.
Offered: Fall, Spring.

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 a score of 85 or higher on the Compass 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.
Offered: Fall, Spring.

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 a score of 85 or higher on the Compass 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.
Offered: Fall, Spring.

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 a score of 85 or higher on the Compass 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.
Offered: Fall, Spring.

Office and Administrative Professions
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

OAP 111 Computer Keyboarding and Document Production
3 cr. hrs. 5 periods (2 lec., 3 lab)
Theory and practice of computer keyboarding. Includes speed and accuracy techniques, language arts skills, correspondence, employment documents, and word processing commands.
Offered: Fall, Spring.

OAP 111A Computer Keyboarding and Document Production: Keyboard
1 cr. hrs. 1.7 periods (.7 lec., 1 lab)
Techniques and functions for computer keyboarding skills. Includes keyboarding, speed and accuracy, language arts, and word processing commands.
Information: OAP 111A, 111B, and 111C together constitute OAP 111.
Offered: Fall, Spring.
OAP 111B Computer Keyboarding and Document Production: Formatting Doc
1 cr. hrs. 1.7 periods (.7 lec., 1 lab)
Continuation of OAP 111A. Includes speed and accuracy, language arts, correspondence, and word processing commands.
Prerequisite(s): OAP 111A.
Information: OAP 111A, 111B, and 111C together constitute OAP 111.
Information: Prerequisite may be waived with equivalent proficiency. See an OAP instructor for information.
Offered: May not be offered this year, check class schedule.

OAP 111C Computer Keyboarding and Document Production: Applications
1 cr. hrs. 1.6 periods (.6 lec., 1 lab)
Continuation of OAP 111B. Includes speed and accuracy, correspondence, employment documents, language arts, and word processing command.
Prerequisite(s): OAP 111B.
Information: OAP 111A, 111B, and 111C together constitute OAP 111.
Offered: May not be offered this year, check class schedule.

OAP 114 Computer Keyboarding: Skill Building
3 cr. hrs. 6 periods (6 lab)
Development of computer keyboarding. Includes skill assessment, skill building development, data input accuracy, increasing keyboarding accuracy and skill building software.
Recommendation: Completion of OAP 111A or equivalent proficiency on computer keyboard before enrolling in this course.
Offered: May not be offered this year, check class schedule.

OAP 123 Professional Development for Administrative Support
3 cr. hrs. 6 periods (6 lab)
Procedures and skills for securing a job. Includes resume development, interview techniques, application forms, application letter, research requirements, customer service skills, job shadowing, and sexual harassment.
Recommendation: Completion of OAP 111 or equivalent proficiency on computer keyboard before enrolling in this course.
Offered: May not be offered this year, check class schedule.

OAP 132 Records Management: Filing Systems
3 cr. hrs. 3 periods (3 lec.)
Principles and procedures of filing systems. Includes rules for indexing, coding, and filing, cross references, filing systems, advantages and disadvantages of each filing system, file maintenance and management, and simulations.
Offered: May not be offered this year, check class schedule.

OAP 151 Business English
3 cr. hrs. 3 periods (3 lec.)
English fundamentals essential for modern business communication. Includes reference skills, parts of speech, basic sentence terms, verbals, types of sentences, punctuation and grammar usage.
Recommendation: Completion of OAP 050 or assessment at the WRT 100 level before enrolling in this course.
Offered: Fall, Spring.

OAP 164 Medical Transcription I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Terms and format for transcribing medical reports. Includes ethics and legal responsibility, preparation of medical reports, transcription of medical records, rules and medical terminology.
Prerequisite(s): HIT 162.
Recommendation: Experience in the medical field and word processing experience highly recommended before enrolling in this course.
Offered: Fall.

OAP 171 Office Procedures
3 cr. hrs. 4 periods (2 lec., 2 lab)
Functions and procedures used in a wide range of office activities. Includes visitors and clients, office functions, document production, communication skills, office duties and tasks, travel arrangements, meetings, conferences, professional attitudes and image, and job evaluation.
Prerequisite(s): OAP 111.
Offered: Fall, Spring.
OAP 199 Introduction to Co-op: Office and Administrative Professions
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): OAP 199WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: May not be offered this year, check class schedule.

OAP 199WK Co-op Work: Office and Administrative Professions
1-8 cr. hrs. 5-40 periods (5-40 lab)
A supervised cooperative work program for students in a related occupation area. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement.
Corequisite(s): OAP 199.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: May not be offered this year, check class schedule.

OAP 224 Machine Transcription
3 cr. hrs. 4 periods (2 lec., 2 lab)
Skills and techniques of transcribing dictated materials. Includes transcription equipment, transcription techniques, language arts development, mailable documents, and career opportunity awareness.
Prerequisite(s): OAP 111 and 151.
Information: Keyboarding speed of 35 WPM and ability to format letters, memos, and reports before enrolling in this course.
Offered: May not be offered this year, check class schedule.

OAP 251 Business Communications
3 cr. hrs. 3 periods (3 lec.)
Principles of effective writing and listening skills. Includes language development, verbal and nonverbal communications, customer relations, and writing and editing correspondence.
Prerequisite(s): OAP 151.
Information: Prerequisite may be waived depending on work experience. See an OAP instructor for prerequisite information.
Offered: Fall, Spring.

OAP 263 Medical Terminology for Disease Pathology
3 cr. hrs. 3 periods (3 lec.)
Examination of disease processes and their effects on the systems of the human body. Includes introduction to diseases, anatomy and physiology, inflammation and immunity, infectious diseases, neoplasms, hereditary diseases, nutritional diseases, and diseases of the organs and body system.
Prerequisite(s): OAP 262.
Offered: Fall, Spring.

OAP 264 Medical Transcription II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of OAP 164. Includes punctuation, capitalization, numbers, figures, abbreviations, business letter transcription, proofreading, spelling, word division and reference books.
Prerequisite(s): OAP 164, and 262.
Recommendation: Keyboarding at 50 WPM is recommended before enrolling in this course.
Offered: Fall.

OAP 266 Medical Transcription III
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of OAP 264. Includes advanced training in punctuation, capitalization, rules, medical correspondence, proofreading, prefixes and suffixes, transcription, and medical terms.
Prerequisite(s): OAP 264.
Recommendation: Keyboarding at 60 WPM is recommended before enrolling in this course.
Offered: Fall.

OAP 299 Introduction to Co-op: Office and Administrative Professions
1 cr. hrs. 1 periods (1 lec.)
Introduction to Cooperative Education for second-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): OAP 299WK.
Information: May be taken two times for a maximum of two credit hours.
Offered: May not be offered this year, check class schedule.
OAP 299WK Co-op Work: Office and Administrative Professions
1-8 cr. hrs. 5-40 periods (5-40 lab)
A supervised cooperative work program for students in an occupation related area. Teacher-coordinators work with
students and their supervisors. Variable credit is available by special arrangement.
Corequisite(s): OAP 299.
Information: May be taken two times for a maximum of sixteen credit hours.
Offered: May not be offered this year, check class schedule.

Optical Science
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

OPS 201 Geometrical and Instrumental Optics I
3 cr. hrs. 3 periods (3 lec.)
Basic principles of light, refraction, reflection, properties of optical glass, prisms, paraxial optics, pupils and stops, visual
and other basic instruments, aberrations, measurements, and testing.
Prerequisite(s): ENG 110IN, MAT 220, and PHY 210/210LB.
Corequisite(s): OPS 201LB.
Offered: May not be offered this year, check class schedule.

OPS 201LB Geometrical and Instrumental Optics I Laboratory
1 cr. hrs. 4 periods (4 lab)
Cleaning optics, measuring refractive indices, reflection, deviating prisms, scanners, ideal imaging, thin lenses, thick
lenses, Gaussian reduction, and throughput.
Corequisite(s): OPS 201.
Offered: May not be offered this year, check class schedule.

OPS 202 Geometrical and Instrumental Optics II
3 cr. hrs. 3 periods (3 lec.)
Optical instruments, field and relay lenses, telescopes, microscopes, optical materials, achromatization, illumination,
cameras, and projectors.
Prerequisite(s): OPS 201/201LB.
Corequisite(s): OPS 202LB.
Offered: May not be offered this year, check class schedule.

OPS 202LB Geometrical and Instrumental Optics II Laboratory
1 cr. hrs. 4 periods (4 lab)
Measuring refractive indices, dispersing and deviating prisms, thin lenses, thick lenses, aberration evaluation, Keplerian
and Galileo telescopes, and compound microscopes.
Corequisite(s): OPS 202.
Offered: May not be offered this year, check class schedule.

Paralegal
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring.

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 or concurrent enrollment, WRT 101 or concurrent enrollment, and REA 112, or a reading
assessment score of 90 or higher on the Compass reading assessment.
Offered: Fall, Spring.
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, Shepard’s 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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall.

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.
Offered: Fall.

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.
Offered: Fall.
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.
Offered: Spring.

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.
Offered: Spring.

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 paralegals' role.
Prerequisite(s): PAR 101.
Information: Prerequisite may be waived if employed in a legal-related field; see a PAR advisor or course instructor.
Offered: Spring.

PAR 210 Administrative Law
4 cr. hrs. 4 periods (4 lec.)
Concepts and procedures of administrative law for paralegals. Includes an overview of laws and regulations in employment, immigration, social security, and environmental law. Also includes practical applications in employment, immigration, social security, and environmental law.
Prerequisite(s): PAR 101 and 103.
Information: Prerequisite(s) may be waived if employed in a legal-related field; see a PAR advisor or course instructor.
Offered: Fall.

PAR 210A 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; see a PAR advisor or course instructor.
Offered: Summer.

PAR 210B 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; see a PAR advisor or course instructor.
Offered: Summer.

PAR 210C 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; see a PAR advisor or course instructor.
Offered: Summer.
PAR 210D Administrative Law: Environmental
1 cr. hrs. 1 periods (1 lec.)
Concepts and procedures of environmental law. Includes an overview of environmental laws and regulations, and practical applications in environmental law.

Prerequisite(s): PAR 101 and 103.
Information: Prerequisites may be waived if employed in a legal-related field; see a PAR advisor or course instructor.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring.

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): CSA 101 and PAR 101.
Information: Prerequisites may be waived if employed in a legal-related field; see a PAR advisor or course instructor.
Offered: Spring.

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.
Offered: Fall, Spring.

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.
Offered: Spring.

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. The Arizona Department of Real Estate will accept this course as satisfying 15 continuing education hours in the following categories (3 agency, 3 contract law, 3 fair housing, 3 real estate legal issues, and 3 general real estate).
Offered: Fall, Spring.

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.
Information: Designed for students in their final semester of course work in the Paralegal Program.
Information: Six credit hours of PAR specialty electives from the following list must be taken - PAR 203, 204, 206, 207, 208, 209, 210, 212, 215, or 217. A minimum of 45 credit hours if completing the AAS Degree, or 27 credit hours in completing the certificate are required.
Information: Application and acceptance required.
Offered: Fall, Spring.
Pharmacy Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PHT 150 Basic Science Concepts for Pharmacy Technology
2 cr. hrs. 2 periods (2 lec.)
An introductory course to provide appropriate background and/or refresher for students enrolled in the PHT program. Includes basic concepts of chemistry (general, organic, biochemistry) with elements of biology/physiology.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring, Summer.

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.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

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): PHT 170 or concurrent enrollment.
Offered: Fall, Spring, Summer.

PHT 174IN Pharmacy Operations
3 cr. hrs. 5 periods (2 lec., 3 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, 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 operations.
Prerequisite(s): PHT 171 or concurrent enrollment.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

PHT 178IN Pharmacy Microcomputers
3 cr. hrs. 5 periods (2 lec., 3 lab)
Basic concepts of computer operation. Includes the Internet, computer hardware and software, and professional pharmacy applications in retail and hospital pharmacy.
Prerequisite(s): PHT 170 or concurrent enrollment.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

PHT 180IN Sterile Products
4 cr. hrs. 6 periods (3 lec., 3 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, antisepsics and sterilization, and sterile products calculations. Also includes introduction to IV labels and profile systems, aseptic techniques, total parenteral nutrition, incompatibilities, quality control, and specialized sterile products.
Prerequisite(s): PHT 171 or concurrent enrollment.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.
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.  
Offered: Fall, Spring.

PHT 182 Drug Therapy II  
4 cr. hrs. 4 periods (4 lec.)  
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.  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring, Summer.

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.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall, Spring.

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.  
Information: Consent of program coordinator is required before enrolling in this course.  
Offered: Fall, Spring.

Philosophy  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PHI 101 Introduction to Philosophy  SUN# PHI 1101  
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.  
Offered: Fall, Spring, Summer.

PHI 120 Introduction to Logic  SUN# PHI 1103  
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.  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring.
PHI 130 Introductory Studies in Ethics and Social Philosophy  SUN# PHI 1105
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.
Offered: Fall, Spring, Summer.

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: This is not a world religions class.
Information: Same as REL 140.
Offered: Fall, Spring, Summer.

Phlebotomy
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring and Summer.

PHB 162 Safety Standards in Phlebotomy
3 cr. hrs. 3 periods (3 lec.)
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, OSHA standards, and proper equipment operation.
Corequisite(s): PHB 164, PHB 166LB.
Offered: Fall, Spring and Summer.

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 OSHA and other regulatory requirements.
Corequisite(s): PHB 162, PHB 166LB.
Offered: Fall, Spring and Summer.

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.
Offered: Fall, Spring and Summer.

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): HCA 160, 162, 164 and 166LB.
Information: Credit hours will vary depending on length of time needed for student to obtain required experience for certification.
Offered: Fall, Spring and Summer.
Physics

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PHY 121 Introductory Physics I
4 cr. hrs. 4 periods (4 lec.)
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, linear momentum, rotational motion, heat, states of matter, and waves and sound.

Prerequisite(s): Placement into College Algebra (MAT 151) or higher.
Corequisite(s): PHY 121LB.
Offered: Fall, Spring, Summer.

PHY 121IN Introductory Physics I SUN# PHI 1111
5 cr. hrs. 7 periods (4 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, linear momentum, rotational motion, heat, states of matter, and waves and sound.

Prerequisite(s): Placement into College Algebra (MAT 151) or higher.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

PHY 121LB Introductory Physics I Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of PHY 121.

Prerequisite(s): Placement into College Algebra (MAT 151) or higher.
Corequisite(s): PHY 121.
Offered: Fall, Spring, Summer.

PHY 122 Introductory Physics II
4 cr. hrs. 4 periods (4 lec.)
Continuation of PHY 121/121LB or 121IN. Includes light, electricity, magnetism and electromagnetism, relativity, atomic physics, quantum physics, wave mechanics, and nuclear physics.

Prerequisite(s): PHY 121/121LB or 121IN.
Corequisite(s): PHY 122LB.
Offered: Fall, Spring, Summer.

PHY 122IN Introductory Physics II SUN# PHI 1112
5 cr. hrs. 7 periods (4 lec., 3 lab)
Continuation of PHY 121/121LB or 121IN. Includes light, electricity, magnetism and electromagnetism, relativity, atomic physics, quantum physics, wave mechanics, and nuclear physics.

Prerequisite(s): PHY 121/121LB or 121IN.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring, Summer.

PHY 122LB Introductory Physics II Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of PHY 122.

Prerequisite(s): PHY 121/121LB or 121IN.
Corequisite(s): PHY 122.
Offered: Fall, Spring, Summer.

PHY 195 Introduction to Research in Physics
4 cr. hrs. 4 periods (4 lec.)
Introduction to the methods of research in physics. 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.
Offered: Fall, Spring, Summer.

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.
Information: May be taken two times for a maximum of eight credit hours.
Offered: Fall, Spring, Summer.
PHY 210 Introductory Mechanics
4 cr. hrs. 4 periods (4 lec.)
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): MAT 220.
Corequisite(s): PHY 210LB.
Information: High school physics is required before enrolling in this course.
Offered: Fall, Spring.

PHY 210IN Introductory Mechanics
5 cr. hrs. 7 periods (4 lec., 3 lab)
Calculus-based introduction to mechanics for physics, and mathematics majors. Includes nature of physics, linear motion and kinematics, dynamics, work and energy, linear momentum, and rotational motion. Also includes in-class exercises, outside observation projects, and independent studies.

Prerequisite(s): MAT 220.
Information: High school physics is required before enrolling in this course.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

PHY 210LB Introductory Mechanics Lab
1 cr. hrs. 3 periods (3 lab)
Laboratory for PHY 210. Includes in-class exercises, outside observation projects, and independent studies. Emphasizes hands-on group and individual experiences to enrich understanding of PHY 210 lecture material.

Corequisite(s): PHY 210.
Information: High school physics is required before enrolling in this course.
Offered: Fall, Spring.

PHY 216 Introductory Electricity and Magnetism
4 cr. hrs. 4 periods (4 lec.)
Calculus-based introduction to electricity and magnetism for physics, mathematics, and engineering majors. Includes electric charge and Coulomb's law, the electric field, Gauss' 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): MAT 231 and PHY 210/210LB or 210IN.
Corequisite(s): PHY 216LB.
Offered: Fall, Spring.

PHY 216IN Introductory Electricity and Magnetism  SUN# PHI 1131
5 cr. hrs. 7 periods (4 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' 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. Also includes in-class exercises, outside observation projects, and independent studies.

Prerequisite(s): MAT 231 and PHY 210/210LB or 210IN.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall, Spring.

PHY 216LB Introductory Electricity and Magnetism Lab
1 cr. hrs. 3 periods (3 lab)
Laboratory for PHY 216. Includes in-class exercises, outside observation projects, and independent studies. Emphasizes hands-on group and individual experiences to enrich understanding of PHY 216 lecture material.

Prerequisite(s): MAT 231 and PHY 210/210LB or 210IN.
Corequisite(s): PHY 216.
Offered: Fall, Spring.

PHY 221 Introduction to Waves and Heat
3 cr. hrs. 3 periods (3 lec.)
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): MAT 231 and PHY 210/210LB or 210IN.
Corequisite(s): PHY 221LB.
Offered: Spring.
PHY 221LB Introduction to Waves and Heat Lab  
1 cr. hrs. 3 periods (3 lab)  
Laboratory for PHY 221. Includes in-class exercises, outside observation projects, and independent studies. Emphasizes hands-on group and individual experiences to enrich understanding of PHY 221 lecture material.  
Prerequisite(s): MAT 231 and PHY 210/210LB or 210IN.  
Corequisite(s): PHY 221.  
Offered: Spring.

PHY 230 Introduction to Modern Physics  
3 cr. hrs. 3 periods (3 lec.)  
Calculus-based introduction to modern physics from the theory of relativity to the origins of quantum mechanics. Includes the classical and special theory of relativity, relativistic kinematics, relativistic dynamics, the quantization of energy, particles and waves, the atom and early quantum theory, the Schrodinger wave equation, and nuclear, and particle physics.  
Prerequisite(s): PHY 210 and 216, or PHY 221 and MAT 231.  
Offered: May not be offered this year, check class schedule.

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.  
Information: May be taken three times for a maximum of twelve credit hours.  
Offered: Summer.

Political Science  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 and state and local government, and international relations.  
Offered: Fall, Spring.

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.  
Information: May be taken two times for a maximum of eight credit hours.  
Offered: May not be offered this year, check class schedule.

POS 201 American National Government and Politics  
3 cr. hrs. 3 periods (3 lec.)  
Basic concepts and substance of American politics. Includes methods of political analysis, cultural environment of American politics, impact of class, gender, and immigration, Constitution, civil liberties, and civil rights, and public opinion and fundamental values. Also includes political institutions, institutions of government, economic and social policy-making, and American foreign policy and interdependence.  
Information: The combination of both POS 201 and 231 satisfies the requirement for teacher certification, as does POS 210.  
Offered: Fall, Spring, Summer.

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 the international systems, foreign policies, and major forms of interactions.  
Offered: Fall, Spring, Summer.

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.  
Offered: Fall, Spring.
POS 204 Introduction to Comparative Politics SUN# POS 2204
3 cr. hrs. 3 periods (3 lec.)
Basic concepts and substance of comparing political systems. Includes methods of comparative political analysis, politics the socio-cultural environment, public authority, and political power, individuals, cultural diversity, and state, political institutions, governmental institutions, and political change.
Offered: Fall, Spring.

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.
Offered: Fall, Spring, Summer.

POS 214 Arizona Constitution
1 cr. hrs. 1 periods (1 lec.)
Fundamental principles of the Arizona Constitution of 1910. Includes importance of state constitutions, legislative branch and direct democracy, Arizona plural executive, judicial branch, and local governments in Arizona.
Information: This course fulfills the Arizona teacher certification requirement for state constitutions.
Offered: Fall, Spring, Summer.

POS 231 American State and Local Governments and Politics SUN# POS 1130
3 cr. hrs. 3 periods (3 lec.)
Basic concepts and substance of American state and local politics and government. Includes methods of political analysis, federalism/intergovernmental relations, cultural environment of state and local politics, impact of class, gender, age and occupation, public opinion and fundamental values. Also includes interest articulation and aggregation, institutions and processes of state and local governments, tribal governments, and state and local policy-making.
Information: The combination of both POS 201 and 231 satisfies the requirements for teacher certification, as does POS 210.
Offered: Fall, Spring.

POS 232 The Politics and History of Immigration
3 cr. hrs. 3 periods (3 lec.)
Examines the politics of immigration in the United States and the phenomenon of emigration in a global context. Includes analyses of the history of immigration as a result of the country's political economy and its evolution and the role of immigration in the socio-political and economic development of the nation.
Information: Same as HIS 232.
Offered: Fall.

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.
Offered: Spring.

POS 290 Political Science Internship
3 cr. hrs. 15 periods (15 lab)
Supervised internship in a local governmental office. Includes placement with elected officials or candidates for public office, governmental agencies, and city, county or state departments. Also includes substantive assignments involving development and application of analytical, research and writing skills.
Prerequisite(s): WRT 101.
Information: May take course a maximum of three times for a total of nine credit hours.
Offered: Fall, Spring, Summer.

Portuguese

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

POR 101 Elementary Portuguese I
4 cr. hrs. 4 periods (4 lec.)
Basic linguistic skills of the Portuguese language. Includes article, gender, numerals, present indicative, irregular plurals, idiomatic expression, commands, the preterite, and cultural traditions. Also includes proficiency in speaking, reading, writing, and understanding Portuguese.
Offered: Fall.
POR 102 Elementary Portuguese II
4 cr. hrs. 4 periods (4 lec.)
Continuation of POR 101. Includes preterite indicative, imperfect indicative, simple past tenses of indicative, pronominal verbs, present participle in progressive constructions, subjunctive, and the use of the present, descriptive adjective, present perfect indicative, conditional verbs, present subjunctive, and cultural traditions. Also includes increased proficiency in listening, speaking, reading, and writing Portuguese.

Prerequisite(s): POR 101.
Offered: Spring.

Professional Flight Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PFT 101 Stage One: Ground School
4 cr. hrs. 4 periods (4 lec.)
Knowledge and procedures for the Federal Aviation Administration (FAA) private pilot ground school certificate. Includes aerodynamics, instruments and systems, weight and balance, cross-country planning, Airman’s Informational Manual (AIM), Notices to Airmen (NOTAMS), aircraft/facility directory, radio navigation, weather, safe and efficient operation of airplanes, and final examination.

Offered: May not be offered this year, check class schedule.

PFT 122 Stage Two: Meteorology
1 cr. hrs. 1 periods (1 lec.)
Continuation of PFT 101. Includes an in-depth study of weather elements, weather hazards, aviation weather reports, and forecasts.

Recommendation: Consent of instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.

PFT 130 Stage Three: Commercial Ground School
5 cr. hrs. 5 periods (5 lec.)
Preparatory course for Federal Aviation Administration (FAA) Commercial Pilot Certification. Includes the information required to pass the FAA written test for the Commercial Pilot Certificate.

Recommendation: Consent of instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.

PFT 204 Stage Four: Commercial Pilot (Instrument) Ground School
4 cr. hrs. 4 periods (4 lec.)
Knowledge and procedures for the Federal Aviation Administration (FAA) instrument pilot certificate. Includes government publications, radio aids, air traffic control procedures, Federal Aviation Regulations (FAR), cross country operations and procedures, weather theory, aviation weather data, flight instruments and systems, altitude instrument flight, flight physiology, and final examination.

Prerequisite(s): PFT 101.
Recommendation: Consent of instructor is required before enrolling in this course.
Offered: Spring.

PFT 230 Flight Instructor: Fundamentals of Instruction
3 cr. hrs. 3 periods (3 lec.)
Study of the basic principles of teaching and learning as it applies to the requirements to obtain the Federal Aviation Administration’s (FAA) Flight Instructor rating. Includes the fundamentals of conveying aeronautical knowledge and skills to beginning and advanced learners in preparation for FAA examinations.

Prerequisite(s): PFT 130 and 204.
Recommendation: Consent of instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.

PFT 231 Flight Instructor: Airplane Ground School
5 cr. hrs. 5 periods (5 lec.)
Theory and procedures associated with the ground school requirements to attain Federal Aviation Administration Flight Instructor certification. Includes aerodynamic principles, engine limitations, pilotage, communications, and federal regulations.

Recommendation: Possession of an Airplane Flight Instructor certificate and instrument rating before enrolling in this course.
Offered: May not be offered this year, check class schedule.
PFT 250 Flight Instructor: Instrument Airplane Ground School
3 cr. hrs. 3 periods (3 lec.)
Theory and procedures associated with the ground school requirements to attain Federal Aviation Administration Flight Instructor - Instrument Airplane certification. Includes the items required by the FAA to obtain an Instrument Flight Rating addition to a Flight Instructor Certificate and a requirement to teach all areas required by the FAA to obtain an Instrument Flight Instructor Airplane Rating addition to a Flight Instructor Certificate.

Recommendation: Possession of an Airplane Flight Instructor certificate and instrument rating is required before enrolling in this course.

Offered: May not be offered this year, check class schedule.

Psychology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PSY 100 Psychology I
6 cr. hrs. 6 periods (6 lec.)
Information: PSY 100A and 100B together constitute PSY 100.
Offered: May not be offered this year, check class schedule.

PSY 100A Psychology I
3 cr. hrs. 3 periods (3 lec.)
Survey of psychology. Includes historical perspectives, theoretical systems and methodology, development, intelligence, thinking and language, personality, psychopathology, psychotherapy, and social psychology.
Information: The content of PSY 100A and 100B together constitute the content of PSY 101.
Offered: May not be offered this year, check class schedule.

PSY 100B Psychology II
3 cr. hrs. 3 periods (3 lec.)
Survey of psychology. Includes historical perspectives, theoretical systems and methodology, structure and functions of the nervous and endocrine systems, perception, learning, memory, motivation and emotion, and stress and health.
Information: The content of PSY 100A and 100B together constitute the content of PSY 101.
Offered: May not be offered this year, check class schedule.

PSY 101 Introduction to Psychology SUN# PSY 1101
4 cr. hrs. 4 periods (4 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.
Information: Content is a combination of elements of PSY 100A and 100B.
Offered: Fall, Spring, Summer.

PSY 132 Psychology and Culture
3 cr. hrs. 3 periods (3 lec.)
Human diversity in behavior and culture using examples from a variety of contexts and nations. Includes cross-cultural approach, understanding culture, culture, self and personality, cross-cultural research methods, enculturation, socialization, and development, cultural influences on organization and the world of work, culture and intergroup relations, culture and social behavior, culture and basic psychological processes, culture and gender, culture and health, diversity of human emotion, culture and language, culture and communication, and cultural diversity.

Recommendation: Completion of PSY 100A or 101 before enrolling in this class.
Offered: Fall, Spring, Summer.

PSY 210 Introduction to Biopsychology
3 cr. hrs. 3 periods (3 lec.)
Survey of the basic principles of the nervous system function. Includes research methods, theoretical perspectives, anatomy and functions of the nervous system, and brain function and behavior. Also includes such topics as the biological basis of sleep and rhythms, stress and health, aggression and violence, and mental disorders.

Prerequisite(s): PSY 100B or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in the class.
Offered: Spring.
PSY 214 Abnormal Psychology
3 cr. hrs. 3 periods (3 lec.)
Overview of the paradigms, 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 100A or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.
Offered: Fall, Spring, Summer.

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 100A, PSY 100B, PSY 101, or SOC 101.
Information: Same as SOC 215.
Offered: Fall, Spring, Summer.

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 100A and 100B, or PSY 101 before enrolling in this course.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

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 100A or 100B or 101 before enrolling in this course.
Offered: Fall, Summer.

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 100A or 101 before enrolling in this course.
Offered: Fall, Summer.

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 100A or 101, and completion of MAT 122 or equivalent with a C or better.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in the class.
Offered: Fall, Spring, Summer.

PSY 240 Developmental Psychology
3 cr. hrs. 3 periods (3 lec.)
Human development from conception through adulthood. Includes physical, cognitive, emotional and social development and potentials at various ages. Also includes research methods used in developmental psychology.

Prerequisite(s): PSY 100A and 100B, or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.
Offered: Fall, Spring, Summer.
PSY 250 Introduction to Social Psychology
3 cr. hrs. 3 periods (3 lec.)
Introduction to major theories and research findings of social psychology. Includes research focus and methods, social influence on individual behavior, effects of culture and gender on social behavior, self-perception and attitudes, and social perceptions and international relations.

Prerequisite(s): PSY 100A or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.
Offered: Fall, Spring.

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 100A or 100B or PSY 101.
Offered: Fall, Spring, Summer.

PSY 265 Normal Personality
3 cr. hrs. 3 periods (3 lec.)
Psychological functioning and coping behaviors for normal personality development. Includes personal learning and growth, stages of personality development, role development, work and leisure, wellness, and managing stress. Also includes love, sexuality, relationships, loneliness and solitude, death and loss, and meaning and values.

Prerequisite(s): PSY 100A or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.
Offered: Fall, Spring, Summer.

PSY 270 Meditation
3 cr. hrs. 3 periods (3 lec.)
Theoretical principles and selected traditions of meditation self-awareness. Includes principles and techniques of meditation, meditation traditions, literature of meditation, meditation arts, and psychology and physiology of meditation.

Information: Same as HUM 270.
Offered: May not be offered this year, check class schedule.

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 100A and 100B, or PSY 101; and completion of 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.
Offered: Fall, Spring, Summer.

PSY 296 Individual Studies in Psychology
1-6 cr. hrs. 1-6 periods (1-6 lec.)
Exploration of special interest areas. Content to be determined by student and facilitator-instructor.

Prerequisite(s): PSY 100A or 101.
Information: Prerequisite(s) may be waived with consent of instructor before enrolling in this class.
Information: May be taken for 1 to 6 credit hours.
Offered: May not be offered this year, check class schedule.

Public Administration
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

PAD 105 Introduction to Public Administration
3 cr. hrs. 3 periods (3 lec.)
Basic concepts and substance of American public administration. Includes a definition of public administration, paradigms of public administration, public organizations in the United States, public management techniques, implementation and evaluation, and ethics and public administration.

Offered: May not be offered this year, check class schedule.
Public Works Supervision

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**PWS 101 Introduction to Public Works**
3 cr. hrs. 3 periods (3 lec.)
Overview of duties and responsibilities of the public works department. Include American roads and highways, concrete and asphalt, soils and surface drainage, beautification, street sweeping and refuse disposal, traffic control and street striping, weed control, sewer maintenance and storm drains, staff supervision, and management responsibilities.
Offered: May not be offered this year, check class schedule.

**PWS 201 Public Works Supervision**
3 cr. hrs. 3 periods (3 lec.)
Preparation for supervision of public works projects. Includes history of public works, worker values, team development, the supervisor’s role, procedures for projects in different settings, and the use of mapping. Also includes related construction materials and plans, estimating materials and costs, laws, regulations, and standards, site preparation, construction and inspection procedures, and a capstone project.
Offered: May not be offered this year, check class schedule.

Radiologic Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**RAD 170 Medical Imaging Fundamentals**
2 cr. hrs. 2 periods (2 lec.)
Principles of radiographic imaging. Includes orientation, production of diagnostic radiation, image formation, ethics and professionalism, patient care and management, and radiographic positioning of the abdomen and chest.
Corequisite(s): RAD 170LB.
Information: Consent of program faculty is required before enrolling in this course.
Information: This course is open only to those students who have been admitted to the RAD program and who have attended the program orientation.
Offered: Summer.

**RAD 170LB Medical Imaging Fundamentals Lab**
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of RAD 170.
Corequisite(s): RAD 170.
Offered: Summer.

**RAD 171 Radiographic Positioning I**
3 cr. hrs. 3 periods (3 lec.)
Overview of radiographic procedures. Includes radiographic positions of the abdomen, chest, upper extremities, shoulder girdle, and lower extremities. Also includes standard terms, positioning considerations for routine and special radiographic procedures, image critique, patient safety, assessment, and pertinent pathology.
Prerequisite(s): RAD 170/170LB.
Corequisite(s): RAD 171LB, RAD 172, RAD 172LB, RAD 173LC.
Information: Consent of program faculty is required before enrolling in this course.
Offered: Fall.

**RAD 171LB Radiographic Positioning I Lab**
1.5 cr. hrs. 4.5 periods (4.5 lab)
This is the lab portion of RAD 171.
Corequisite(s): RAD 171, RAD 172, RAD 172LB, RAD 173LC.
Offered: Fall.

**RAD 172 Medical Imaging Technology I**
3 cr. hrs. 3 periods (3 lec.)
Introduction to the principles of x-ray production. Includes radiographic imaging orientation, matter and the atom, mass and energy, basic electricity, formulation of x-ray techniques and technique chart, and x-ray tubes. Also includes diagnostic x-ray systems, as low as reasonably achievable (ALARA) guidelines, and kilovoltage, milliamperage, and milliamperage second.
Prerequisite(s): RAD 170/170LB.
Corequisite(s): RAD 171, RAD 171LB, RAD 172LB, RAD 173LC.
Information: Consent of program faculty is required before enrolling in this course.
Offered: Fall.
RAD 172LB Medical Imaging Technology I Lab
.5 cr. hrs. 1.5 periods (1.5 lab)
This is the lab portion of RAD 172.

Prerequisite(s): RAD 170/170LB.
Corequisite(s): RAD 171, RAD 171LB, RAD 172, RAD 173LC.

Information: Consent of program faculty is required before enrolling in this course.
Offered: Fall.

RAD 173LC Clinical Education I
6 cr. hrs. 24 periods (24 lab)
Introduction to the first clinical practicum. Includes clinical site orientation, basic operation of radiographic equipment, patient care, exam protocols and review of department policies. Also includes upper and lower extremities, chest, and abdomen radiographic exams.

Prerequisite(s): RAD 170/170LB.
Corequisite(s): RAD 171, RAD 171LB, RAD 172, RAD 172LB.

Information: Consent of program faculty is required before enrolling in this course.
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Offered: Fall.

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, boney thorax, and vertebral column. Also includes pediatric radiography, trauma/surgical mobile radiography, and related osseous system pathology.

Prerequisite(s): RAD 171/171LB, 172/172LB, 173LC.
Corequisite(s): RAD 174LB, RAD 175, RAD 175LB, RAD 176LC.

Information: Consent of program faculty is required before enrolling in this course.
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Offered: Spring.

RAD 174LB Radiographic Positioning II Lab
1.5 cr. hrs. 4.5 periods (4.5 lab)
This is the lab portion of RAD 174.

Corequisite(s): RAD 174, RAD 175, RAD 175LB, RAD 176LC.
Offered: Spring.

RAD 175 Medical Imaging Technology II
3 cr. hrs. 3 periods (3 lec.)
Continuation of RAD 172/172LB. Includes cones, diaphragms, and collimators; grids, magnetism and electromagnetism, x-ray generators, technical factor calculations, automatic exposure control, and x-ray detection devices. Also includes equipment accuracy regulations, digital imaging, and mobile radiography and fluoroscopy.

Prerequisite(s): RAD 171/171LB, 172/172LB, 173LC.
Corequisite(s): RAD 174, RAD 174LB, RAD 175LB, RAD 176LC.

Information: Consent of program faculty is required before enrolling in this course.
Offered: Spring.

RAD 175LB Medical Imaging Technology II Lab
.5 cr. hrs. 1.5 periods (1.5 lab)
This is the lab portion of RAD 175.

Prerequisite(s): RAD 171/171LB, 172/172LB, 173LC.
Corequisite(s): RAD 174, RAD 174LB, RAD 175, RAD 176LC.

Information: Consent of program faculty is required before enrolling in this course.
Offered: Spring.

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, 173LC.
Corequisite(s): RAD 174, RAD 174LB, RAD 175, RAD 175LB.

Information: Consent of program faculty is required before enrolling in this course.
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Offered: Spring.
RAD 177LC Clinical Education III
6 cr. hrs. 24 periods (24 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, 176LC.
Information: Consent of program faculty is required before enrolling in this course.
Information: Competency-based assigned, 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.
Offered: Summer.

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, and the biliary system.
Prerequisite(s): RAD 174/174LB, 177LC.
Corequisite(s): RAD 181LB, RAD 182, RAD 182LB, RAD 183LC.
Information: Consent of program coordinator is required before enrolling in this course.
Offered: Fall.

RAD 181LB Radiographic Positioning III Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of RAD 181.
Corequisite(s): RAD 181, RAD 182, RAD 182LB, RAD 183LC.
Offered: Fall.

RAD 182 Medical Imaging Technology III
3 cr. hrs. 3 periods (3 lec.)
Continuation of RAD 175. Includes tomography, image intensification, digital fluoroscopy, special imaging procedures,
conventional film processing and advanced imaging modalities.
Prerequisite(s): RAD 175/175LB, 177LC.
Corequisite(s): RAD 181, RAD 181LB, RAD 182LB, RAD 183LC.
Information: Consent of program faculty is required before enrolling in this course.
Offered: Fall.

RAD 182LB Medical Imaging Technology III Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of RAD 182.
Corequisite(s): RAD 181, RAD 181LB, RAD 182, RAD 183LC.
Offered: Fall.

RAD 183LC Clinical Education IV
4 cr. hrs. 16 periods (16 lab)
Continuation of RAD 177LC. Includes diagnostic and fluoroscopic equipment and procedures, contrast media policies and
protocols, intravenous administration, and gastrointestinal, genitourinary, and biliary exams.
Prerequisite(s): RAD 177LC.
Corequisite(s): RAD 181, RAD 181LB, RAD 182, RAD 182LB.
Information: Consent of program faculty is required before enrolling in this course.
Information: Competency-based assigned, 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.
Offered: Fall.

RAD 184 Radiographic Positioning IV
3 cr. hrs. 3 periods (3 lec.)
Continuation of RAD 181. Includes routine skull, sinuses, facial bone radiographs and radiation biology.
Prerequisite(s): RAD 181/181LB, 182/182LB, 183LC.
Corequisite(s): RAD 184LB, RAD 185, RAD 186LC.
Information: Consent of program faculty is required before enrolling in this course.
Offered: Spring.
RAD 184LB Radiographic Positioning IV Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of RAD 184.
Corequisite(s): RAD 184, RAD 185, RAD 186LC.
Offered: Spring.

RAD 185 Clinical Seminar
1.5 cr. hrs. 1.5 periods (1.5 lec.)
This is a capstone course. Includes review of radiographic procedures, image acquisition and evaluation, patient care, equipment operation, and quality control, radiation protection.
Prerequisite(s): RAD 181/181LB, 182/182LB, 183LC.
Corequisite(s): RAD 184, RAD 184LB, RAD 186LC.
Information: Consent of program faculty is required before enrolling in this course.
Information: This is a capstone course which includes instruction in applying application to the American Registry of Radiologic Technology (AART) and the Medical Radiologic Technology Board of Examiners (MRTBE). The course includes both a written mock registry and a computerized exam.
Offered: Spring.

RAD 186LC Clinical Education V
6 cr. hrs. 24 periods (24 lab)
Continuation of RAD 183LC. Includes skull and facial bones radiographic procedures, and advanced modality rotations.
Prerequisite(s): RAD 181/181LB, 182/182LB, 183LC.
Corequisite(s): RAD 184, RAD 184LB, RAD 185.
Information: Consent of program faculty is required before enrolling in this course.
Information: 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.
Offered: Spring.

Reading
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

REA 068 Techniques of Vocabulary
2 cr. hrs. 2 periods (2 lec.)
Introduction to basic strategies for vocabulary development. Includes use of context clues, word parts, the dictionary, word cards, imaging techniques and vocabulary resources.
Information: May be taken four times for a maximum of eight credit hours.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring, Summer.

REA 075 Spelling
2 cr. hrs. 2 periods (2 lec.)
Development of strategies for improving spelling. Includes basics of the English spelling system and spelling rules.
Information: May be taken two times for a maximum of four credit hours.
Offered: May not be offered this year, check class schedule.

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 Reading assessment test.
Information: Designed for persons who need to improve strategies in order to increase their success in college.
Information: May be taken two times for a maximum of eight credit hours.
Offered: Fall, Spring, Summer.
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): REA 081 with a C or better required score on the Reading assessment test.
Information: May be taken two times for a maximum of eight credit hours.
Offered: Fall, Spring, Summer.

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): REA 091 with a C or better or required score on Reading assessment test. Writing: WRT 070 with a C or better or placement into WRT 100 or higher.
Information: Student may be admitted with instructor recommendation.
Offered: Fall, Spring, Summer.

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): REA 091 with a grade of C or better or satisfactory score on Reading assessment. Writing: WRT 070 with a C or better or placement into WRT 100 or higher.
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.
Same as REA 112.
Offered: Fall, Spring.

REA 125 Speed Reading
2 cr. hrs. 2 periods (2 lec.)
Improvement of reading rate. Includes reading and study habits, visual perception, rate and flexibility, and comprehension.
Prerequisite(s): REA 112 or required score on the Reading assessment test.
Offered: May not be offered this year, check class schedule.

Real Estate
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

RLS 101 Principles of Real Estate I/License Preparation
3 cr. hrs. 3 periods (3 lec.)
Combined with RLS 102, RLS 101 is an in-depth and comprehensive study of the principles and laws that govern real estate. Includes, but is not limited to: the discussion of ethics and the real estate profession; characteristics of real property; general brokerage and listing agreements; contracts and contract law; ownership of real property; legal descriptions of real property; land development and construction; financing; acquisitions and transfer of title; property insurance and warranties; property valuation and the appraisal process; real estate math: licensing and the activities of Arizona licensees; and Arizona specific real estate law.
Information: The Arizona Department of Real Estate recognizes and accepts RLS101 as satisfaction of meeting forty-five (45) of the mandatory ninety (90) hours of pre-licensing educational requirements for salespersons.
Information: RLS 101 and 102 together constitute RLS 105.
Offered: Fall, Spring.

RLS 102 Principles of Real Estate II/ License Preparation
3 cr. hrs. 3 periods (3 lec.)
Continuation of RLS 101. Combined with RLS 101, RLS 102 is an in-depth and comprehensive study of the principles and laws that govern real estate. Includes, but is not limited to: principles and law of agency; estates in real property; government restrictions on property; liens, easements and other encumbrances; property management; escrow and settlement procedures; real estate math; licensing, and the activities of Arizona licensees; and Arizona specific real estate law.
Recommendation: Completion of RLS 101 before enrolling in this course.
Information: The Arizona Department of Real Estate recognizes and accepts RLS 102 as satisfaction of meeting forty-five (45) of the mandatory ninety (90) hours of pre-licensing educational requirements for salespersons.
Information: RLS 101 and 102 together constitute RLS 105.
Offered: Fall, Spring.
RLS 105 Principles of Real Estate/License Preparation
6 cr. hrs. 6 periods (6 lec.)
Principles of real estate and the associated rules and regulations. Includes real estate profession and ethics, property characteristics, listing agreements, ownership of real property, legal descriptions, property development, property insurance, property valuation and the appraisal process, contracts and contract law, financing, real estate math, acquisition and transfer of title, licensing, continuation of contracts, principles of agency, estates in real property, government restrictions on property, liens, easements, and other encumbrances, property management, activities of Arizona licensees, escrow and settlement procedures, Arizona Residential Landlord and Tenant Act, and Arizona real estate law.
Information: RLS 101 and 102 together constitute RLS 105.
Information: The Arizona Department of Real Estate accepts this course as satisfying the required 90 hours of pre-licensing educational requirements for salespersons.
Offered: May not be offered this year, check class schedule.

RLS 106 Contract Writing
1 cr. hrs. 1 periods (1 lec.)
Overview of recent developments in the real estate profession. Includes contract writing, computing, and ethical practices.
Information: This course is intended for people interested in the real estate field and is designed to meet the six hours of contract writing required by the Arizona Department of Real Estate for new salespersons.
Offered: May not be offered this year, check class schedule.

RLS 155 Real Estate License Exam Review
1 cr. hrs. 1 periods (1 lec.)
Review of the State of Arizona Real Estate Department licensing exam material. Includes real estate profession and ethics, property characteristics, ownership of property, legal descriptions, contracts and contract law, estates in real property and transfer of title, property development, property insurance, appraisal, financing, real estate math, agency, government and real estate, water law, liens, easements, and encumbrances, property management, escrow and settlement, Arizona Residential Landlord and Tenant Act, licensing, and Arizona real estate law.
Prerequisite(s): RLS 101 and 102, or 105.
Information: In order to enroll in this course, students must have completed the prerequisites and received a prelicensure education certificate to prepare for the state exam for real estate sales licensing.
Offered: May not be offered this year, check class schedule.

RLS 252 Advanced Appraisal Techniques
3 cr. hrs. 3 periods (3 lec.)
Analysis of data on income-producing properties. Includes rationale for income capitalization approach, income expectancy, relationship of income and value, analysis of market evidence, direct and yield capitalization, mathematics of finance, mortgage and equity contributions, mortgage-equity capitalization, discounted cash flow analysis, and critique of the internal rate of return.
Information: RLS 202 or consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

Religion
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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, teaching of Judaism, festivals and rituals of Judaism, development of Christianity, teaching 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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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: This is not a world religions class.
Information: Same as PHI 140.
Offered: Fall, Spring, Summer.
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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

REL 233 Early Christianity
3 cr. hrs. 3 periods (3 lec.)
History and selected writings of the first three hundred years of Christianity. Includes the world of early Christianity, writings of major Church Fathers, early Christian literature, and Christianity in the early Fourth Century.
Offered: May not be offered this year, check class schedule.

REL 234 Islam
3 cr. hrs. 3 periods (3 lec.)
History and literature of Islam. Includes basic themes of the Qur’an, life of the Prophet Mohammed, basic tenets and practices of Islam, origin and development of Sufism, and historical and political development of Islam from Muhammad to the present.
Offered: Spring.

REL 250 Religion and Culture in the Southwest
3 cr. hrs. 3 periods (3 lec.)
Introduction to the relationship and various forms of religion and culture in the Southwest. Includes native traditions, European influences, Southwestern Catholicism, other religious influences in the Southwestern United States, and contemporary religious traditions in the Southwest.
Offered: May not be offered this year, check class schedule.

REL 273 Judaism
3 cr. hrs. 3 periods (3 lec.)
Introduction to the Jewish religion. Includes the central themes of Judaism, Days of Awe, Shabbat, Pesach, Shavuot, Lots, Hanukkah, cycle of Jewish life, and rituals, myths, and communities.
Offered: May not be offered this year, check class schedule.

REL 275 Native American Worldviews
3 cr. hrs. 3 periods (3 lec.)
Native American religions surveying concepts of reality, morality, ethics, and the environment. Includes concept of worldview, traditional Native American religious systems, Native American religions in a changing world, and future of Native American religious thought.
Offered: May not be offered this year, check class schedule.

Reserve Officers Training Corps — ROTC - Air Force
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

MLA 100 Foundations of Air Force I
2 cr. hrs. 2 periods (2 lec.)
First Year General Military Course (GMC) Survey of the doctrine, mission, and organization of the United States Air Force (USAF); U.S. strategic offensive and defensive forces; U.S. general purpose and aerospace support forces.
Information: United States Air Force Reserve Officers’ Training Corps (AFROTC) Cadets must attend a Leadership Lab on Tuesday and Thursday from 6:45 A.M. to 7:45 A.M.
Offered: May not be offered this year, check class schedule.
MLA 101 Foundation of the Air Force II
2 cr. hrs. 2 periods (2 lec.)
Continuation of MLA 100. First Year General Military Course (GMC) Survey of the doctrine, mission, and organization of the United States Air Force (USAF); U.S. strategic offensive and defensive forces; U.S. general purpose and aerospace support forces.
Information: United States Air Force Reserve Officers’ Training Corps (AFROTC) Cadets must attend a Leadership Lab on Tuesday and Thursday from 6:45 A.M. to 7:45 A.M.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

MLA 200 Airpower History I
2 cr. hrs. 2 periods (2 lec.)
Second Year General Military Concepts Survey of the development of aviation from the advent of the age to the present, with emphasis on military aviation and its relationship with political and economic aspects of historical world situations.
Information: United States Air Force Reserve Officers’ Training Corps (AFROTC) Cadets must attend a Leadership Lab on Tuesday and Thursday from 6:45 A.M. to 7:45 A.M.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

MLA 201 Airpower History II
2 cr. hrs. 2 periods (2 lec.)
Continuation of MLA 200. Second Year General Military Course Survey of the development of aviation from the advent of the age to the present, with emphasis on military aviation and its relationship with political and economic aspects of historical world situations.
Information: United States Air Force Reserve Officers’ Training Corps (AFROTC) Cadets must attend a Leadership Lab on Tuesday and Thursday from 6:45 A.M. to 7:45 A.M.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

Reserve Officers Training Corps — ROTC - Army

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

MLS 100 Introduction to Military Skills I
3 cr. hrs. 3 periods (3 lec.)
Organization of the Army. Principles and techniques of applied leadership, customs, traditions and military courtesy; basic marksmanship; first aid; land navigation; small-unit tactics; desert survival; and self-defense.
Information: Field trip to Ft. Huachuca, AZ.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

MLS 101 Introduction to Military Skills II
3 cr. hrs. 3 periods (3 lec.)
Organization of the Army; principles and techniques of applied leadership; customs, traditions and military courtesy; basic marksmanship; first aid; land navigation; small-unit tactics; desert survival; and self defense.
Information: Required field trip to Ft. Huachuca, AZ.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

MLS 103 Ranger Challenge
1 cr. hrs. 2 periods (2 lab)
Introduction to the basic military skills needed to complete the ranger challenge. Includes individual fitness training, team building skills, self discipline, and conditioning.
Offered: May not be offered this year, check class schedule.
MLS 200 Army Leadership Dynamics I
3 cr. hrs. 3 periods (3 lec.)
Development of leadership training for the individual in small unit levels, introduction into military tactic planning skills, practical experiences in writing and briefing military operation orders and land navigation.
Information: Required field trip to Ft. Huachuca, AZ.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

MLS 201 Army Leadership Dynamics II
3 cr. hrs. 3 periods (3 lec.)
Development of leadership training for the individual in small unit levels. Introduction into military tactical planning skills, practical experiences in writing and briefing military operation orders and land navigation.
Information: Required field trip to Ft. Huachuca, AZ.
Offered: May not be offered this year, check class schedule.

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.
Information: See an instructor before enrolling in this course.
Offered: May not be offered this year, check class schedule.

NSP 101 Introduction to Naval Science
3 cr. hrs. 3 periods (3 lec.)
Introduction to the naval service through a historical overview for naval midshipmen. Includes general discussions of the broad concepts of seapower and studies in the organizational structure of the U.S. Navy and its major components.
Information: Acceptance into the Navy ROTC program at the University of Arizona is required before enrolling in this course.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

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: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

NSP 103 Naval Laboratory I (Marine Option)
2 cr. hrs. 3 periods (1 lec., 2 lab)
Overview of drill and physical readiness requirements for Marines. Includes topics, such as drill and ceremonies, physical fitness, Officer Candidate School (OCS) preparation, Land Navigation training, safety awareness, general military subjects, and applied field exercises in Marine Corps small unit tactics.
Information: Acceptance into the Navy ROTC program (Marine Option) at the University of Arizona is required before enrolling in this course or permission of instructor.
Information: May be taken 11 times for a maximum of 22 credits.
Offered: May not be offered this year, check class schedule.
NSP 200 Naval Laboratory II
2 cr. hrs. 3 periods (1 lec., 2 lab)
Various topics such as drill and ceremonies, physical fitness, cruise preparation, sail training, safety awareness, personal finances, and applied exercises in naval ship system, navigation, naval operations, naval administration, and military justice.
Information: Offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

NSP 201 Naval Ship Systems II: Weapons
3 cr. hrs. 3 periods (3 lec.)
Introduction to the theory and principles of operation of naval weapons systems. Includes types of weapons, fire control problems and solutions, equipment and systems capabilities and limitations, theories of target acquisition identification and tracking, trajectory principles, and basic naval ordinance.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

NSP 202 Sea Power and Maritime Affairs
3 cr. hrs. 3 periods (3 lec.)
United States Naval history from the American Revolution to the present. Includes the general concept of seapower, the role of various warfare components of the Navy in supporting its mission, the implementation of seapower as an instrument of national policy, and a comparative study of U.S. and Soviet naval strategies.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

NSP 205 Leadership and Management
3 cr. hrs. 3 periods (3 lec.)
Basic concepts of management and organization. Includes concept applications to operations and personnel management. Practical applications at laboratory reinforces traditional management principles as practiced within the Department of the Navy.
Information: Course offered in cooperation with the University of Arizona.
Offered: May not be offered this year, check class schedule.

Respiratory Therapy
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

RTH 110 Introduction to Respiratory Care
4 cr. hrs. 4 periods (4 lec.)
Overview of respiratory care. Includes respiratory care and the health care system, computer applications, terms, symbols, and units of measure, patient safety, communication, and record keeping, demonstration of basic life support, principles of infection control, ethical and legal implications of practice, cultural sensitivity in health care, and disaster preparedness.
Corequisite(s): RTH 112, RTH 121, RTH 121LB, RTH 125LC.
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.
Offered: Fall

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.
Prerequisite(s): BIO 160.
Corequisite(s): RTH 110, RTH 121, RTH 121LB, RTH 125LC.
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.
Offered: Fall

RTH 121 Basic Therapeutics
4 cr. hrs. 4 periods (4 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 125LC.
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.
Offered: Fall
RTH 121LB Basic Therapeutics Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of RTH 121.
Corequisite(s): RTH 110, RTH 112, RTH 121, RTH 125LC.
Information: Students must be admitted to the Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. See a faculty advisor prior to enrollment.
Offered: Fall.

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, 125LC.
Corequisite(s): RTH 123LB, RTH 124, RTH 135LC, RTH 162, RTH 246.
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.
Offered: Spring.

RTH 123LB Basic Assessment and Monitoring Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of RTH 123.
Prerequisite(s): RTH 110, 112, 121/121LB, 125LC.
Corequisite(s): RTH 123, RTH 124, RTH 135LC, RTH 162, RTH 246.
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.
Offered: Spring.

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, 125LC.
Corequisite(s): RTH 123, RTH 124, RTH 135LC, RTH 162, RTH 246.
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.
Offered: Spring.

RTH 125LC Clinical Procedures I
1 cr. hrs. 4 periods (4 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 system, and medical record data entry, utilization of the medical record to retrieve information, therapist observation, medical gas therapy, and patient assessment and monitoring. Also includes aerosol therapy administration, hyperinflation therapy, evaluation of the effectiveness of therapy, and patient care plans.
Corequisite(s): RTH 110, RTH 112, RTH 121, RTH 121LB.
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.
Offered: Spring.

RTH 135LC Clinical Procedures II
3 cr. hrs. 12 periods (12 lab)
Continuation of RTH 125. Includes infection control procedures, medical asepsis, equipment disinfection, and processing, aerosol and humidity therapy, medical gas therapy, IPPB therapy, incentive spirometry, and chest physiotherapy. Also includes airway management and care, basic cardiopulmonary resuscitation, arterial blood gases, and case study presentation.
Prerequisite(s): RTH 110, 112, 121/121LB, 125LC.
Corequisite(s): RTH 123, RTH 123LB, RTH 124, RTH 162, RTH 246.
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.
Offered: Summer.
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, 125LC.
Corequisite(s): RTH 123, RTH 123LB, RTH 124, RTH 135LC, RTH 246.
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.
Offered: Spring.

RTH 241 Critical Care Therapeutics
4 cr. hrs. 4 periods (4 lec.)
Study of critical care principles and procedures 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): RTH 123/123LB, 124, 135LC, 162, 246.
Corequisite(s): RTH 241LB, RTH 243, RTH 243LB, RTH 245LC.
Information: Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.
Offered: Fall.

RTH 243LB Critical Care Therapeutics Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of RTH 241.

Prerequisite(s): RTH 123/123LB, 124, 135LC, 162, 246.
Corequisite(s): RTH 241, RTH 243, RTH 243LB, RTH 245LC.
Information: Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.
Offered: Fall.

RTH 243 Advanced Assessment and Monitoring
4 cr. hrs. 4 periods (4 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, bronchoscopy, and advanced pulmonary function testing.

Prerequisite(s): RTH 123/123LB, 124, 135LC, 162, 246.
Corequisite(s): RTH 241, RTH 241LB, RTH 243LB, RTH 245LC.
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.
Offered: Fall.

RTH 243LB Advanced Assessment and Monitoring Lab
1 cr. hrs. 3 periods (3 lab)
This is the lab portion of RTH 243.

Prerequisite(s): RTH 123/123LB, 124, 135LC, 162, 246.
Corequisite(s): RTH 241, RTH 241LB, RTH 243, RTH 245LC.
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.
Offered: Fall.

RTH 245LC Clinical Procedures III
4 cr. hrs. 16 periods (16 lab)
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): RTH 123/123LB, 124, 135LC, 162, 246.
Corequisite(s): RTH 241, RTH 241LB, RTH 243, RTH 243LB.
Information: Students must be admitted to the Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course. See a faculty advisor prior to enrollment.
Offered: Fall.
RTH 246 Cardiorespiratory Disorders I
3 cr. hrs. 3 periods (3 lec.)
Study of commonly encountered respiratory disorders in the adult patient. Includes infectious pulmonary diseases, obstructive pulmonary disease, traumatic injuries of the lungs and chest, pulmonary vascular diseases and disorders of the pleura and chest wall, and various important cardiopulmonary topics.

**Prerequisite(s):** RTH 110, 112, 121/121LB, 125LC.

**Corequisite(s):** RTH 123, RTH 123LB, RTH 124, RTH 135LC, RTH 162.

**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.

**Offered:** Spring.

RTH 251 Specialty Therapeutics
4 cr. hrs. 4 periods (4 lec.)
Study of respiratory therapies used in specialized environments. Includes development and care of the fetus, care of the neonatal and pediatric patient, management of ventilation and oxygenation in the neonatal and pediatric patient, transport, home care, and care of the parents, pulmonary rehabilitation, and advanced cardiorespiratory care therapies.

**Prerequisite(s):** RTH 241/241LB, 243/243LB, 245LC.

**Corequisite(s):** RTH 251LB, RTH 255LC, RTH 256, RTH 257LB.

**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.

**Offered:** Spring.

RTH 251LB Specialty Therapeutics Lab
1 cr. hrs. 3 periods (3 lab)
This is the Lab portion of RTH 251.

**Prerequisite(s):** RTH 241/241LB, 243/243LB, 245LC.

**Corequisite(s):** RTH 251, RTH 255LC, RTH 256, RTH 257LB.

**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.

**Offered:** Spring.

RTH 255LC Clinical Procedures IV
4 cr. hrs. 16 periods (16 lab)
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, 245LC.

**Corequisite(s):** RTH 251, RTH 255LC, RTH 256, RTH 257LB.

**Information:** Students must be admitted to the PCC Respiratory program and obtain consent of the Respiratory Care department before enrolling in this course.

**Offered:** Spring.

RTH 256 Cardiorespiratory Disorders II
3 cr. hrs. 3 periods (3 lec.)
Continuation of RTH 246. Includes neuromuscular disorders affecting ventilation, neoplastic diseases of the lung and environmental lung diseases. Also 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, 243, 245, 246.

**Corequisite(s):** RTH 251, RTH 251LB, RTH 255LC, RTH 257LB.

**Information:** Students must be admitted to the PCC Respiratory Care program and obtain consent of the Respiratory Care department before enrolling in this course.

**Offered:** Spring.

RTH 257LB Clinical Applications and Professional Development
1 cr. hrs. 4 periods (4 lab)
Completion of clinical application projects. Includes preparation of resumes, review for and completion of computerized self-assessment exams for credentialing, and interaction with licensure and national credentialing organizations. Also includes participation in a respiratory related service learning project and professional development through shared reporting.

**Prerequisite(s):** RTH 241/241LB, 243/243LB, 245LC.

**Corequisite(s):** RTH 251, RTH 251LB, RTH 255LC, RTH 256.

**Information:** Students must be admitted to the PCC Respiratory Care program and obtain consent from the Respiratory Care department before enrolling in this course. See a faculty advisor prior to enrollment.

**Offered:** Spring.
RTH 295 Independent Research in Respiratory Therapy
.5-4 cr. hrs. 1.5-12 periods (1.5-12 lab)
Experience in scientific laboratory or field research in respiratory therapy.
Information: This course is open only to those students who have been admitted to the RTH program.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken three times for a maximum of twelve credit hours.
Offered: Fall, Spring, Summer.

Russian
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

RUS 101 Elementary Russian I SUN# RUS 1101
4 cr. hrs. 4 periods (4 lec.)
Introduction to the Russian language. Includes Cyrillic alphabet, greetings, gender, readings, communications, and activities.
Offered: May not be offered this year, check class schedule.

RUS 102 Elementary Russian II SUN# RUS 1102
4 cr. hrs. 4 periods (4 lec.)
Continuation of RUS 101. Includes grammar and vocabulary, housing and furniture, family and professions, shopping, money and measurements, and biographies of people.
Prerequisite(s): RUS 101.
Information: Prerequisite(s) may be waived with one year of high school Russian. See an instructor.
Offered: May not be offered this year, check class schedule.

RUS 201 Intermediate Russian I SUN# RUS 2201
4 cr. hrs. 4 periods (4 lec.)
Continuation of RUS 102. Includes grammar review, plural case endings, prepositional/accusative cases, weather and climate, and reflexive verbs.
Prerequisite(s): RUS 102.
Information: Prerequisite(s) may be waived with two years of high school Russian. See an instructor.
Offered: May not be offered this year, check class schedule.

RUS 202 Intermediate Russian II SUN# RUS 2202
4 cr. hrs. 4 periods (4 lec.)
Continuation of RUS 201. Includes grammar review, sports terms, health care terms, postal system, traveling in Russia, and etiquette.
Prerequisite(s): RUS 201.
Offered: May not be offered this year, check class schedule.

Science for Teachers
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 142, and one of the following: AST 101/101LB or 101IN, AST 102/102LB or 102IN; CHM 121/121LB or 121IN, CHM 130/130LB or 130IN, CHM 151/151LB or 151IN; GEO 101, GEO 102; GLG 102IN; PHY 115/115LB, PHY 121/121LB or 121IN.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Information: SCT 280A, 280B, and 280C together constitute SCT 280.
Offered: Fall.
SCT 280A Process of Science for Elementary Educators I - Module A
1 cr. hrs. 1 periods (1 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.
Prerequisite(s): BIO 105, MAT 142, and one of the following: AST 101/101LB or 101IN, AST 102/102LB or 102IN; CHM
121/121LB or 121IN; CHM 130/130LB or 130IN, CHM 151/151LB or 151IN; GEO 101, GEO 102; GLG 102; PHY
115/115LB, PHY 121/121LB or 121IN.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Information: SCT 280A, 280B, and 280C together constitute SCT 280.
Offered: May not be offered this year, check class schedule.

SCT 280B Process of Science for Elementary Educators I - Module B
1 cr. hrs. 1 periods (1 lec.)
Interdisciplinary, hands-on, inquiry-based science for elementary educators. Includes matter and energy, and the
universe.
Prerequisite(s): SCT 280A.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Information: SCT 280A, 280B, and 280C together constitute SCT 280.
Offered: May not be offered this year, check class schedule.

SCT 280C Process of Science for Elementary Educators I - Module C
1 cr. hrs. 1 periods (1 lec.)
Interdisciplinary, hands-on, inquiry-based science for elementary educators. Includes the structure of life and organisms in
their environment.
Prerequisite(s): SCT 280B.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Information: SCT 280A, 280B, and 280C together constitute SCT 280.
Offered: May not be offered this year, check class schedule.

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 or 280C.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Offered: Spring.

SCT 281A Process of Science for Elementary Educators II - Module A
1 cr. hrs. 1 periods (1 lec.)
Continuation of SCT 280. Includes integrating additional science in the elementary school classroom, human health and
human society.
Prerequisite(s): SCT 280 or 280C.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Offered: May not be offered this year, check class schedule.

SCT 281B Process of Science for Elementary Educators II - Module B
1 cr. hrs. 1 periods (1 lec.)
Continuation of SCT 281A. Includes integrating additional science in the elementary school classroom, human society, and
applying science and technology.
Prerequisite(s): SCT 281A.
Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Offered: May not be offered this year, check class schedule.
SCT 281C Process of Science for Elementary Educators II - Module C
1 cr. hrs. 1 periods (1 lec.)
Continuation of SCT 281B. Includes integrating additional science in the elementary school classroom, historical perspectives, and critical thinking processes.

Prerequisite(s): SCT 281B.

Information: Designed for elementary education majors.
Information: Prerequisite(s) may be waived with Elementary or Secondary Teacher Certification.
Information: Does not meet AGEC requirements for science.
Offered: May not be offered this year, check class schedule.

Sign Language
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

SLG 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.
Offered: Fall, Spring.

SLG 055 Conversational Sign Language II
3 cr. hrs. 3 periods (3 lec.)
Continuation of SLG 050. Includes intermediate sign vocabulary, d/Deaf culture, and a focus on developing intermediate skills in sign language.
Information: Completion of SLG 050 or consent of instructor is required before enrolling in this course.
Offered: Spring.

SLG 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 1) provide a “signing only” environment for students to practice classroom skills with Deaf tutors; 2) expose students to communication in a Deaf environment; and 3) provide students with real life exposure to the Deaf community.
Information: This class is conducted primarily without voice.
Offered: Fall, Spring, Summer.

SLG 102 American Sign Language II
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of SLG 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): SLG 101 with a grade of C or better.
Information: Students will be required to perform ten additional lab hours outside of the regular schedule. The lab experience is designed to 1) provide a “signing only” environment for students to practice classroom skills with Deaf tutors; 2) expose students to communication in a Deaf environment; 3) provide students with real life exposure to the Deaf community.
Information: This class is conducted primarily without voice.
Offered: Fall, Spring, Summer.
SLG 201 American Sign Language III
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of SLG 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): SLG 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 1) provide a “signing only” environment for students to practice classroom skills with Deaf tutors; 2) expose students to communication in a Deaf environment; 3) provide students with real life exposure to the Deaf community.
Information: This class is conducted primarily without voice.
Offered: Fall, Spring.

SLG 202 American Sign Language IV
4 cr. hrs. 6 periods (3 lec., 3 lab)
Continuation of SLG 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): SLG 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 1) provide a “signing only” environment for students to practice classroom skills with Deaf tutors; 2) expose students to communication in a Deaf environment; 3) provide students with real life exposure to the Deaf community.
Information: This class is conducted primarily without voice.
Offered: Fall, Spring.

SLG 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): SLG 102.
Information: Student must have consent of instructor.
Information: Course content and performance objectives will be determined by conference between student and instructional faculty.
Offered: Summer.

Social Services
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

SSE 110 Introduction to Social Welfare
3 cr. hrs. 3 periods (3 lec.)
Introduction to the social welfare system. Includes historical context, approaches to service delivery, social welfare as an institution, development of the social work profession, practice methods, professional values and code of ethics, private and public funding sources, bureaucratic structures, community resources, and welfare myths and realities. Also includes social problems and special populations, cultural awareness and competency, use of technology, professional organizations, and public policy and future trends.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

SSE 121 Study of Substance Abuse
3 cr. hrs. 3 periods (3 lec.)
Introduction to the study of substance and drug abuse in the United States. Includes history of drug use and historical development of prohibitions, classification and effects of drugs, diagnosis and assessment of abuse and dependence, 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.
Offered: Fall.
SSE 123 Substance Abuse Prevention
3 cr. hrs. 3 periods (3 lec.)
Comprehensive review of approaches to substance abuse prevention. 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, special populations, prevention in the workplace, and program evaluation.
Offered: Spring.

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.
Offered: May not be offered this year, check class schedule.

SSE 140 Domestic Violence: Causes and Cures
3 cr. hrs. 3 periods (3 lec.)
Overview of historical and contemporary causes of domestic violence. Includes laws and law enforcement, society, populations victimized, and diagnosis and treatment techniques. Also includes community resources, treatment centers, and support groups, cultural awareness, special populations at risk, and theories explaining the prevalence of domestic violence.
Offered: Spring.

SSE 146 Child Abuse Intervention and Protection
3 cr. hrs. 3 periods (3 lec.)
Overview of the scope and nature of child abuse and neglect. Includes child abuse from historical and cultural perspectives, context of the family and child development, analyzing dynamics, identifying symptoms and assessing risks, short-term and long-term effects of child abuse, intervention and the roles of professionals, and prevention management of child abuse cases.
Offered: Fall.

SSE 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.
Information: Same as FSN 154.
Offered: Fall, Spring, Summer.

SSE 160 Introduction to Youth Services
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 normal developmental needs of children and adolescents, special needs of dependent, delinquent, challenged and special needs youth, and prevention in youth services with an emphasis on the role of diversity.
Offered: Fall.

SSE 170 Community Health Advisor
3 cr. hrs. 3 periods (3 lec.)
Preparation of Community Health Advisors for outreach disease prevention, advocacy, education, and referral services within prescribed communities. Includes national and local history of community health work programs, overview of the health services system, communication and relationship building skills, coping with stress, personal health, building self-esteem, and dealing with feelings. Also includes presentation skills, using support materials, interacting with other agencies within the community, managing home visits, dealing with challenging situations, professional issues, and empowering and mobilizing for action.
Offered: Fall, Spring.

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.
Offered: Spring.
SSE 205 Case Report Writing
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, report content, ethical and legal issues, current trends in behavioral health case report writing, and cultural competence.
Offered: May not be offered this year, check class schedule. Offered: Fall.

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, community change, overcoming resistance, professional practice and ethics, promoting neighborhood change, using information technology, planning for action, personal power, and people as a valuable resource. Also includes developing resources and funding, use of the media, community development, principles for effective leadership, strategies for institutional change, and government structure and legislative lobbying.
Prerequisite(s): SSE 110.
Offered: Fall, Spring.

SSE 211 Group Technique Applications
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.
Offered: Fall, Spring.

SSE 220 Treatment of the Substance Abuser
3 cr. hrs. 3 periods (3 lec.)
Principles and techniques of treating the substance abuser. Includes treatment modalities, helping, treatment plans, case studies, withdrawal, and value clarification. Also includes role playing in treatment situations, causes of substance abuse, and integration of substance abuse treatment and case management skills.
Prerequisite(s): SSE 121.
Recommendation: Completion of SSE 123 before enrolling in this course.
Offered: Spring.

SSE 222 Political, Legal and Ethical Aspects of Drug Use
3 cr. hrs. 3 periods (3 lec.)
Overview of drug abuse and the law. Includes historical and legal overview, major drug legislation and court decisions; drugs, drug effects, drug classification, and the concept of addiction; nature, uses, legal status, and social and economic aspects of the major psychoactive drugs. Also includes attitudes toward drug use and the connection between drugs, crime, and gangs; implications of decriminalization or legalization of illicit drugs, international drug trafficking and its effect on U.S. policy and programs, law enforcement, and ethics and ethical practice.
Prerequisite(s): SSE 121.
Recommendation: Completion of SSE 123 before enrolling in this course.
Offered: Fall.

SSE 224 Substance Use/Abuse Among Diverse/Special Needs Populations
3 cr. hrs. 3 periods (3 lec.)
Examination and focus on understanding racial and ethnic differences in the prevalence of substance abuse. Includes cultural and substance use and abuse, ethnic and racial groups, profiles of special populations, differences, cultural elements and relationships, dynamic factors, common terminology, counseling, and counseling theories.
Recommendation: Completion of SSE 121 is recommended before enrolling in this course.
Offered: Spring.

SSE 242 Crisis Intervention, Theory and Techniques
3 cr. hrs. 3 periods (3 lec.)
Principles and practice of crisis intervention. Includes theories of crisis intervention and prevention, dynamics of a crisis situation, families and individuals in crisis, self-awareness, communication, and relationship building, and responding to anxiety-provoking situations. Also includes techniques of crisis intervention, role playing in various crisis situations, grief and grief resolution techniques, and community resources and referral methods.
Prerequisite(s): SSE 285.
Information: Prerequisite may be waived with consent of instructor.
Offered: Spring.
SSE 260 Youth Services: Policy, Practice and Prevention
3 cr. hrs. 3 periods (3 lec.)
Principles and techniques of working with youth. Includes an examination of national, state and local policies which impact youth services, effective prevention strategies and how to implement them within the community, and practice skills necessary for working in a variety of youth service settings.

Prerequisite(s): SSE 160.
Offered: Spring.

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.
Information: Requires 40 hours of classroom-mediated community agency contact.
Offered: Fall, Spring.

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 281 or concurrent enrollment.
Offered: Fall, Spring.

SSE 289 Topics in Community Involvement
1-6 cr. hrs. 1-6 periods (1-6 lec.)
Direct, constructive student involvement in community problems. Includes social change and community service, action planning, change strategies, mobilizing personal power, team membership, causes of community problems, evaluation procedures, formal and informal community resources, geographic and functional communities, and roles of change agents and community service agents.

Information: Students employed or working as volunteers with agencies or groups may get credit for those activities under this course.
Information: Same as SOC 289.
Information: May be taken two times for a maximum of six credit hours.
Offered: Fall, Spring.

SSE 290 Youth Services Field Experience
4 cr. hrs. 16 periods (1 lec., 15 lab)
Supervised placement in community youth serving agencies. Includes completion of written assignments, regular supervision services with agency supervisors, assistance with resume writing, orientation to agencies in the community, and evaluation of student performance.

Prerequisite(s): SSE 160, 285.
Recommendation: Consult instructor for alternative prerequisites.
Information: May be taken two times for a maximum of eight credit hours. Consent of instructor is required before enrolling in this course. Students complete 225 clock hours of direct service at a youth serving organization during the semester.
Offered: Fall, Spring.

SSE 292 Social Services Field Experience
4 cr. hrs. 16 periods (1 lec., 15 lab)
Supervised placement in community social services agencies. Includes completion of written assignments, regular supervision service with agency supervisors, assistance with resume writing, orientation to agencies in the community, and evaluation of student performance.

Prerequisite(s): SSE 285.
Recommendation: Consult instructor for alternative prerequisites.
Information: May be taken two times for a maximum of eight credit hours. Consent of instructor is required before enrolling in this course. Students complete 225 clock hours of direct service at a social service organization during the semester.
Offered: Fall, Spring.
SSE 293 Community Health and Development Field Experience
4 cr. hrs. 16 periods (1 lec., 15 lab)
Community health and development skills practiced and evaluated in community-based health, human service, education and community agencies and settings. Includes supervised placement in an appropriate social service agency or organization, supervisory services and site visits, orientation to community agencies and organizations, field experience evaluation, and classroom seminars.

Prerequisite(s): SSE 170.
Information: Students complete 225 clock hours of direct service at a community health and development organization during the semester.
Offered: Fall, Spring.

SSE 296 Independent Study in Social Services
1-3 cr. hrs. 3-9 periods (3-9 lab)
Advanced projects, research and learning in the social services. Content to be determined by conference between student and instructor.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken three times for a maximum of nine credit hours.
Offered: Fall.

Sociology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

SOC 101 Introduction to Sociology  SUN# SOC 1101
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.
Offered: Fall, Spring, Summer.

SOC 109 Introduction to Global Studies
3 cr. hrs. 3 periods (3 lec.)
Survey of modern globalization. Includes the study of dimensions of globalization, global organizations, global politics, cultural globalization, the global economy, global environmental independence, and global social movements and counter movements. Also includes global interactions and their current effects on the restructuring of cultural, political, and economic institutions worldwide.
Information: Same as ANT 109 and GLS 109.
Offered: Fall, Spring.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.
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.  
Offered: Fall, Spring.

SOC 140 Sociology of Religion  
3 cr. hrs. 3 periods (3 lec.)  
Sociological analysis of religion as a social institutional arena. Includes functional versus substantive definitions of religion, methodological stance sociologists take toward religion as an object of study, classical and contemporary theoretical perspectives on religion, major faith traditions, secularization versus fundamentalism, globalization and religion, new religious movements, religion and key social statuses, and religious diversity and change in the U.S.  
Offered: May not be offered this year, check class schedule.

SOC 166 Social Gerontology  
3 cr. hrs. 3 periods (3 lec.)  
Introduction to the social aspects of aging and the aged. Includes the concept of the life course, the demographics of a graying United States, myths and facts about aging, sociological theories on aging, historical and cross-cultural analyses of aging, age norms, family patterns in later life, retirement patterns, living environments in later life, the social meaning of death and dying, the economics of aging, the politics of aging, social services for older Americans and religion and aging.  
Offered: Spring.

SOC 201 Race, Ethnicity, Minority Groups and Social Justice  SUN# SOC 2215  
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.  
Offered: Fall, Spring.

SOC 203 Sociology of Utopia  
3 cr. hrs. 3 periods (3 lec.)  
Exploration of the idea of utopia and its influence on human societies throughout global history. Includes utopia and social structure, utopias before Christianity, Christian and humanist utopianism, utopian revivals and dystopias, and utopian thinking and social institutions.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: Fall, Spring.

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 PSY 100A or 100B or 101 or SOC 101 before enrolling in this course.  
Information: Same as PSY 215.  
Offered: Fall, Spring, Summer.

SOC 280 Sociology of Education  
3 cr. hrs. 3 periods (3 lec.)  
Analysis of the role and purpose of education in society. Includes overview of the education system, social theories of education, cultural theories of educational, policy and school reform, and education for individual and societal change.  
Offered: May not be offered this year, check class schedule.

SOC 289 Topics in Community Involvement  
3 cr. hrs. 3 periods (3 lec.)  
Direct, constructive student involvement in community problems. Includes social change and community service, action planning, change strategies, mobilizing personal power, team membership, causes of community problems, evaluation procedures, formal and informal community resources, geographic and functional communities, and roles of change agents and community service agents.  
Information: Students employed or working as volunteers with agencies or groups may get credit for those activities described in this course.  
Information: Same as SSE 289.  
Information: May be taken two times for a maximum of 6 credits.  
Offered: May not be offered this year, check class schedule.
SOC 296 Individual Studies 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.*
*Information: May be taken two times for a maximum of six credit hours.*
Offered: May not be offered this year, check class schedule.

### Solar Technologies

*For courses numbered 098, 198, 298, see "Topic Courses" on page 286*

#### SLR 100 Introduction to Photovoltaic Technology
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to photovoltaic (PV) technology. Includes the application of PV technology, basic concepts, safety basics, energy efficient appliances, solar energy fundamentals, solar cell materials, solar cell physics, and connecting solar panels in series and parallel. Also includes testing solar cells and modules, sunlight concentrators, photovoltaic system components, and system financial considerations.
Offered: May not be offered this year, check class schedule.

#### 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.*
Offered: Fall, Spring, Summer.

#### SLR 102 Advanced Photovoltaic Installation
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of SHC 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.
*Information: This course specifically provides preparation for the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Installer Advanced Certification exam.*
Offered: Fall, Spring, Summer.

#### SLR 103 Introduction to Batteries and Fuel Cells
3 cr. hrs. 4 periods (2 lec., 2 lab)
Introduction to the fundamentals of batteries and fuel cells. Includes history, basic structure and construction, theory of operation, and different types of commercially available batteries and fuel cells. Also includes the basic physics and chemistry related to the operation of these devices, and the electrical properties of the devices when connected in series and in parallel.
Offered: May not be offered this year, check class schedule.

#### 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.
*Prerequisites: BCT 106, 111, 112, 113, 114, and 115.*
Offered: Spring.
Spanish

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring.

SPA 101 Elementary Spanish I SUN# SPA 1101
4 cr. hrs. 4 periods (4 lec.)
Introduction to Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness.

Offered: Fall, Spring, Summer.

SPA 101HC Elementary Spanish I for Healthcare
4 cr. hrs. 4 periods (4 lec.)
Introduction to Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness. Also includes vocabulary in a healthcare context.

Information: Same as SPA 101. Emphasis on healthcare-related vocabulary.
Offered: Fall, Spring.

SPA 101LE Elementary Spanish I for Law Enforcement
4 cr. hrs. 4 periods (4 lec.)
Introduction to Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness. Also includes vocabulary in a law enforcement context.

Information: Same as SPA 101. Emphasis on law-enforcement-related vocabulary.
Offered: Fall, Spring.

SPA 101SP Elementary Spanish I for School Personnel
4 cr. hrs. 4 periods (4 lec.)
Introduction to Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness. Also includes vocabulary in an educational context.

Information: Same as SPA 101. Emphasis on educational-related vocabulary.
Offered: May not be offered this year, check class schedule.

SPA 101SS Elementary Spanish I for Social Services
4 cr. hrs. 4 periods (4 lec.)
Introduction to Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness. Also includes vocabulary in a social services context.

Information: Same as SPA 101.
Information: Emphasis on social services-related vocabulary.
Offered: May not be offered this year, check class schedule.

SPA 102 Elementary Spanish II SUN# SPA 1102
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.
Information: Prerequisite(s) may be waived with one year of high school Spanish. See an instructor, advisor, or counselor.
Offered: Fall, Spring, Summer.

SPA 102HC Elementary Spanish II for Healthcare
4 cr. hrs. 4 periods (4 lec.)
Continuation of SPA 101HC. 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 and vocabulary in a healthcare context.

Prerequisite(s): SPA 101.
Information: Same as SPA 102. Emphasis on healthcare-related vocabulary.
Information: Prerequisite(s) may be waived with one year of high school Spanish. See an instructor, advisor, or counselor.
Offered: Fall, Spring.
SPA 102LE Elementary Spanish II for Law Enforcement
4 cr. hrs. 4 periods (4 lec.)
Continuation of SPA 101LE. 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 and vocabulary in a law enforcement context.

Prerequisite(s): SPA 101.
Information: Same as SPA 102. Emphasis on law-enforcement-related vocabulary.
Information: Prerequisite(s) may be waived with one year of high school Spanish. See an instructor, advisor, or counselor.
Offered: Fall, Spring.

SPA 102SS Elementary Spanish II for Social Services
4 cr. hrs. 4 periods (4 lec.)
Continuation of SPA 101SS. 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 and vocabulary in a social services context.

Prerequisite(s): SPA 101.
Information: Same as SPA 102. Emphasis on social-services-related vocabulary.
Information: Prerequisite(s) may be waived with one year of high school Spanish. See an instructor, advisor, or counselor.
Offered: May not be offered this year, check class schedule.

SPA 103 Beginning Spanish for Spanish Speakers
4 cr. hrs. 4 periods (4 lec.)
Spanish for individuals of bilingual background. Includes basic oral and written forms for bilingual individuals, 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): Ability to speak Spanish.
Offered: Fall, Spring.

SPA 106 Beginning Conversation
3 cr. hrs. 3 periods (3 lec.)
Introduction to conversational Spanish. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and cultural perspectives. Also includes reading, writing, speaking, and listening skills with primary emphasis on oral communication.
Offered: May not be offered this year, check class schedule.

SPA 107 Intermediate Conversation
3 cr. hrs. 3 periods (3 lec.)
Continuation of SPA 106. Includes oral and written communication, additional grammatical structures, additional interpersonal transactions, and additional cultural perspectives. Also includes additional reading, writing, speaking, and listening skills with primary emphasis on oral communication.

Prerequisite(s): SPA 106.
Offered: May not be offered this year, check class schedule.

SPA 201 Intermediate Spanish I SUN# SPA 2201
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.
Offered: Fall, Spring, Summer.

SPA 202 Intermediate Spanish II SUN# SPA 2202
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.
Offered: Fall, Spring, Summer.
SPA 203 Writing and Oral Skills for Spanish Speakers
4 cr. hrs. 4 periods (4 lec.)
Continuation of SPA 103. Includes further development of oral and written forms for bilingual individuals, 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.
Information: Prerequisites may be waived with ability to speak Spanish.
Offered: Fall, Spring.

SPA 206 Advanced Conversation
4 cr. hrs. 4 periods (4 lec.)
Development of oral communicative techniques and critical thinking skills. Includes communicative skills, complex vocabulary utilization, grammatical structures, and cultural awareness.

Recommendation: Completion of one year of Spanish before enrolling in this course.
Offered: May not be offered this year, check class schedule.

SPA 207 Latin America on Film
4 cr. hrs. 4 periods (4 lec.)
Viewing and discussing Spanish language on films from regions such as Cuba, Caribbean, Central and South America, and Mexico. Includes communicative skills, complex vocabulary utilization, grammatical structures, cultural awareness, and Latin American cinema. Also includes the development of communicative techniques and critical thinking skills through film.

Prerequisite(s): SPA 202 or 206.
Offered: May not be offered this year, check class schedule.

SPA 240 Grammar and Composition
3 cr. hrs. 3 periods (3 lec.)
Development of advanced grammar and writing communicative skills. Includes grammar structures, factual, expository, and argumentative writing.

Prerequisite(s): SPA 202 or TRS 102.
Offered: May not be offered this year, check class schedule.

SPA 250 Spanish Phonetics
3 cr. hrs. 3 periods (3 lec.)
Introduction to the sound system of the Spanish language. Includes terminology, classification of sounds, characteristics of sounds, phonological elements, and dialectal variation.

Prerequisite(s): SPA 202 or 253.
Offered: May not be offered this year, check class schedule.

SPA 251 Intermediate Spanish III
3 cr. hrs. 3 periods (3 lec.)
Tools for thinking critically and analytically in Spanish. Includes writing proficiency, reading proficiency, and control of language through lexical and grammatical precision.

Prerequisite(s): SPA 202.
Offered: May not be offered this year, check class schedule.

SPA 253 Intermediate Spanish for Spanish Speakers
4 cr. hrs. 4 periods (4 lec.)
Intensive writing and speaking in Spanish for individuals of bilingual background. Includes intermediate oral communication, complex reading communication, intermediate written communication, and themes in popular and traditional cultures.

Prerequisite(s): SPA 203.
Information: Prerequisites may be waived with ability to speak, read, and write Spanish.
Offered: Fall.

SPA 254 Intermediate Grammar and Writing for Spanish Speakers
3 cr. hrs. 3 periods (3 lec.)
Intensive grammar and writing for Spanish speaker 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 253.
Information: Prerequisite(s) may be waived with ability to speak, read, and write Spanish.
Offered: Spring.

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.
Offered: May not be offered this year, check class schedule.
Special Education

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

EDS 250 Issues in Special Education
1 cr. hrs. 1 periods (1 lec.)
Overview of issues presented in public schools when special education services are provided to students with disabilities. Includes perspectives which challenge and support the delivery of services and examination of their consequences.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Offered: Summer.

EDS 251 Legal Issues in Special Education
1 cr. hrs. 1 periods (1 lec.)
An introduction to legal issues in special education. Includes the history of special education law, Section 504 of the Rehabilitation Act, Americans with Disabilities Act, and the purpose, principles and amendments to the Individuals with Disabilities Education Act (IDEA) and its re-authorizations, application of free and appropriate publication education to students with disabilities, least restrictive environment mandates. Also includes disciplinary procedures, transition plans, and key themes in legal regulations regarding the disabled.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Offered: Summer.

EDS 252 Understanding Individuals with Disabilities Education Act
1 cr. hrs. 1 periods (1 lec.)
Overview and examination of the Individuals with Disabilities Education Act, 2004, which mandates students with disabilities be provided a free, appropriate public education. Includes an emphasis on the process of eligibility. Also includes the delivery of services to school age children.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Offered: Summer.

EDS 253 Development and Implementation of IEPs
1 cr. hrs. 1 periods (1 lec.)
Overview and examination of an Individualized Education Program (IEP) required components. Includes how IEPs are developed for and utilized in the classroom. The roles and responsibilities of required members of IEP team will be reviewed and analyzed in relation to students, family members, and teachers. Also includes an emphasis on the cycle of creating, reviewing and revising an IEP to reflect the needs of students.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Offered: Summer.

EDS 254 Classroom Management for Special Education
2 cr. hrs. 2 periods (2 lec.)
Overview of skills, methods and strategies for behavior management. Includes a foundation on how to recognize, evaluate, and respond to classroom situations. Also includes how to develop classroom management skills with educators, parents and students, as well as develop a behavior management plan for special needs students.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

Information: This class requires a 10-hour special education practicum.

Offered: Spring.

EDS 255 Assistive Technology for Special Education Teachers
3 cr. hrs. 3 periods (3 lec.)
An overview of the assistive technology devices and services that can assist a person with a disability to overcome the functional limitations of the disability. Includes the continuum of assistive technology devices, instructional designs for learning, curriculum adaptation and integration strategies, and assessment and evaluation protocols. Also includes how to make better choices about technology and individual needs.

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.

Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.

Offered: Fall.
EDS 256 Survey of Special Education
3 cr. hrs. 3 periods (3 lec.)
Overview of special education foundations and issues. Includes special education issues: mental retardation, learning disabilities, Attention Deficit Hyperactivity Disorder (ADHD), emotional and behavioral disorders, gifted and talented, speech and language disorders, hearing and visual impairments, autism, and physical, health, and traumatic brain injuries. Also includes special education history, legislation, family effects, diversity, and educational considerations.
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Fall.

EDS 257 Diagnosis Assessment of Students with Mild-Moderate Disabilities
3 cr. hrs. 3 periods (3 lec.)
Concepts, skills, and techniques to diagnose and assess students with learning and mild-moderate disabilities. Includes how to develop screening, pre-referral, eligibility, and placement for individuals with exceptional learning needs skills. Includes an emphasis on informal assessment for instruction and on the introduction of formal assessment for special education eligibility. Also includes synthesizing, developing and writing a comprehensive report.
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Information: This class requires a 15-hour special education practicum.
Offered: Fall.

EDS 258A Foundations of Instruction Cross Categorical
2 cr. hrs. 2 periods (2 lec.)
Foundations of instruction for designated disabilities, including mild to moderate mental retardation, learning disabilities, emotional disabilities, and physical and other health impairments. Includes assessment, instruction, and instructional design; establishment and maintenance of case records; use of assessment data to design goals and objectives; development of Individualized Education Plans (IEPs); Also includes communication and consultation with teachers, families, students, administrators, and agencies; directing and monitoring activities of Paraprofessionals, aids, volunteers, and peer tutors; and modification of curriculum and instruction to accommodate student needs.
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: Spring.

EDS 258B Foundations of Instruction Learning Disabilities
2 cr. hrs. 2 periods (2 lec.)
Foundations of instruction for students with learning disabilities. Includes assessment, instruction, and instructional design; establishment and maintenance of case records; use of assessment data to design goals and objectives; development of Individualized Education Plans (IEPs); communication and consultation with teachers, families, students, administrators, and agencies; directing and monitoring activities of Paraprofessionals, aids, volunteers, and peer tutors; and modify curriculum and instruction to accommodate student needs.
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.
Information: This course requires a 10-hour practicum.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Offered: May not be offered this year, check class schedule.

EDS 259 Teaching Methods Cross-Categorical
3 cr. hrs. 3 periods (3 lec.)
Overview of how to educate special needs students while meeting their needs academically and socially. Includes methods of teaching students in the Special Education classroom, general education classroom; methods of collaboration with general education teachers and parents; and setting up your classroom for classroom management success. Also includes how to construct and carry out an effective lesson plan and develop an Individualized Education Program (IEP).
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. This class requires a 15-hour special education practicum.
Offered: Spring.

EDS 260 Developmental Reading, Instruction, Assessment, Remediation
3 cr. hrs. 3 periods (3 lec.)
Concepts, techniques and skills to teach struggling readers. Includes the components of reading. Also includes the application of concepts to conduct assessments, instructional and remedial activities for struggling readers. Also includes how to participate in the Individualized Education Program (IEP) process to help develop long-range individualized instructional plans and create short-range goals and objectives considering an individual student's abilities, needs and learning environment.
Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course. Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply. This class requires a 15-hour special education practicum. Same as EDU 260.
Offered: Spring.
EDS 261 Teaching Methods Learning Disabilities
3 cr. hrs. 3 periods (3 lec.)
Foundations in the field of learning disabilities (LD) and related disabilities. Includes the characteristics of learners, team collaboration, and current legislation. Includes assessments for diagnosis, placement, and instruction. Also includes specific remedial techniques for teaching reading, writing, and mathematics to students with LD and Attention Deficit Hyperactivity Disorder (ADHD).

Information: Admission to the Post-Degree Teacher Certification Program or Education department permission is required before enrolling in this course.
Information: Requires a paid subscription to TaskStream electronic portfolio. Additional fees apply.
Information: This class requires a 15-hour special education practicum.
Offered: Spring.

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.
Information: EDS 290A, 290B, 290C, and 290D together constitute EDS 290.
Offered: Fall, Spring.

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.
Information: EDS 290A, 290B, 290C, and 290D together constitute EDS 290.
Offered: Fall, Spring.

EDS 290B 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.
Information: EDS 290A, 290B, 290C, and 290D together constitute EDS 290.
Offered: Fall, Spring.

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.
Information: EDS 290A, 290B, 290C, and 290D together constitute EDS 290.
Offered: Fall, Spring.

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.
Information: EDS 290A, 290B, 290C, and 290D together constitute EDS 290.
Offered: Fall, Spring.
SPE 102 Introduction to Speech Communication  SUN# COM 1100
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 the communication process, interpersonal communication, public speaking, and group process.
Offered: Fall, Spring, Summer.

SPE 110 Public Speaking
3 cr. hrs. 3 periods (3 lec.)
Study and training in public speaking with emphasis on audience adaptation. Includes the responsibility of the public speaker and the listener, informative and persuasive speaking, audience analysis, organizing information, visual aids, delivery techniques, evaluating evidence, handling questions, and speech evaluation.
Offered: Fall, Spring, Summer.

SPE 120 Business and Professional Communications
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.
Offered: Fall, Spring, Summer.

SPE 124 Argumentation
3 cr. hrs. 3 periods (3 lec.)
Principles and practice of argumentation. Includes construction of an argument and argumentative cases, communicating arguments, and analyzing arguments in advertising and the media.
Offered: May not be offered this year, check class schedule.

SPE 130 Small Group Discussion
3 cr. hrs. 3 periods (3 lec.)
Study and training in group process. Includes the nature and functions of groups, preparation for group work, group communication process, problem solving and decision making, and observing and evaluating the group process.
Offered: May not be offered this year, check class schedule.

STU 100 College Study Skills
1 cr. hrs. 1 periods (1 lec.)
Skills and techniques required for being an efficient student. Includes study techniques, memory and concentration, college resources, goal setting, time management, attentive listening, organization of lecture/text material, note taking systems, test taking strategies, and test anxiety.
Information: STU 100A, 100B, 100C, and 100D together constitute STU 100.
Offered: Fall, Spring, Summer.

STU 100A How to Study
.25 cr. hrs. .25 periods (.25 lec.)
Applications and concepts of successful study. Includes study techniques, memory and concentration, and available college resources.
Information: STU 100A, 100B, 100C, and 100D together constitute STU 100.
Offered: Fall, Spring.

STU 100B Time Management
.25 cr. hrs. .25 periods (.25 lec.)
Factors affecting individual use of time. Includes goal setting and time management.
Information: STU 100A, 100B, 100C, and 100D together constitute STU 100.
Offered: Fall, Spring.

STU 100C Note Taking Tips
.25 cr. hrs. .25 periods (.25 lec.)
Factors affecting the note taking process. Includes attentive listening, organization of lecture/text material, and note taking systems.
Information: STU 100A, 100B, 100C, and 100D together constitute STU 100.
Offered: Fall, Spring.
STU 100D Testing Tips
.25 cr. hrs. .25 periods (.25 lec.)
Explaining strategies and causes of a successful testing experience. Includes test taking strategies and test anxiety.
Information: STU 100A, 100B, 100C, and 100D together constitute STU 100.
Offered: Fall, Spring.

STU 102 Personal Finance in College Decision Making
1 cr. hrs. 1 periods (1 lec.)
Basic elements of personal and family finances. Includes managing personal finances, funding resources and financial obligations, strategies for success, setting a career direction and taking control of the future, and transition from college into the mainstream.
Offered: May not be offered this year, check class schedule.

STU 102C Strategies for Taking Control of Your Future
.25 cr. hrs. .25 periods (.25 lec.)
Development of an educational plan based on career expectations. Includes strategies for success, setting a career direction, and taking control of the future.
Offered: Fall, Spring, Summer.

STU 105 Math Success Skills
1 cr. hrs. 1 periods (1 lec.)
Math study and test-taking skills and overcoming math anxiety. Includes effective math study skills, reading a math text, problem solving, current research on math anxiety, and overcoming math anxiety.
Offered: Fall, Spring.

STU 107 University Transfer Preparation
1 cr. hrs. 1 periods (1 lec.)
Preparation of a plan for a successful transition to a university. Includes clarification of degree/major based on career and academic interests, introduction and awareness of transfer resources, financial resources and college payment plans, development of a personal education plan for transfer, and general transition planning.
Prerequisite(s): REA 081.
Recommendation: Concurrently enrolled or completion of REA 091 and WRT 100, and take this course before completing 30 college credits. Take this course prior to STU 210 - University Transfer.
Offered: Fall, Spring.

STU 109 Making Career Choices
2 cr. hrs. 2 periods (2 lec.)
Development of skills and knowledge necessary to make career choices. Includes values clarification, skill identification, interest and personality assessments, career research strategies, education and career plan, self-assessment inventory, adult career development, action steps for career goal achievement, and career decision-making.
Offered: Fall, Spring, Summer.

STU 109A Making Career Choices: Interests and Values
1 cr. hrs. 1 periods (1 lec.)
Interests and values to make career choices. Includes values clarification, skill identification, interest and personality assessments, career research strategies.
Offered: Fall, Spring, Summer.

STU 109B Career Choices: Goal Development
1 cr. hrs. 1 periods (1 lec.)
Provides resources for goal development. Includes an education and career plan, self-assessment inventory, adult career development, action steps for career goal achievement, and career decision making.
Offered: May not be offered this year, check class schedule.

STU 110 Academic and Confidence Skills Building
2 cr. hrs. 2 periods (2 lec.)
Exploration and assessment of student’s current self-esteem level for student success. Includes definition, early self-esteem theorists, components of self-esteem development, global and area specific self-esteem, personal assessment, influence of significant others, life script, personality preferences, cultural influences, communication skills, irrational beliefs, cognitive behavioral change strategies as applied to college and life, risk taking, altruism, and goal development for student success.
Offered: Fall, Spring.
STU 121 Adult College Re-entry Skills
3 cr. hrs. 3 periods (3 lec.)
Designed for adult re-entry to assist in making a smooth transition into college. Includes: career exploration and employability skills; college success skills; college and community resources; and personal, academic and financial goals. Also includes confidence building, gender awareness, and communication in the workplace.
Offered: Fall, Spring.

STU 130 Stress Management for Wellness
3 cr. hrs. 3 periods (3 lec.)
Principles and techniques for stress management and wellness in daily life. Includes the environmental, physical, and psychological factors and impact of stress on daily life, identification of wellness concepts in the areas of nutrition, physical fitness, addictions, codependency, stress management, emotions, life values, stress management for college issues, mindfulness, and a healthy lifestyle.
Offered: Fall, Spring.

STU 130C Stress Management for Wellness: Module C
1 cr. hrs. 1 periods (1 lec.)
Principles and techniques for stress management and wellness in daily life. Includes the nature of addictions, codependency, the relationship of emotions and health, mindfulness, and developing a realistic wellness plan.
Information: STU 130A, 130B, and 130C together constitute STU 130.
Offered: Spring.

STU 150 Becoming a Master Student
3 cr. hrs. 3 periods (3 lec.)
Enhance academic and personal skills to maximize learning and success at the college level. Includes critical thinking skills, learning styles, college and/or career goals, study skills and personal styles. Also includes examination of human diversity, values, perspectives, as they relate to student's success.
Recommendation: Completion of REA 091 and WRT 100 before enrolling in this course or concurrent enrollment.
Offered: Fall, Spring.

STU 200 Becoming a Critical Thinker
3 cr. hrs. 3 periods (3 lec.)
Development and application of thinking strategies. Includes understanding the fundamentals, application of thinking skills to everyday issues, perceiving, believing and knowing, critical questioning, reporting, inferring and judging, argumentation, language and thought, creative thinking, and critical thinking strategies.
Recommendation: Completion of REA 091 before enrolling in this course or concurrent enrollment.
Offered: Fall, Spring, Summer.

STU 210 Transfer Strategies
2 cr. hrs. 2 periods (2 lec.)
Transitioning to a college or university. Includes planning for successful transferring, community college/university resources, and transition procedures and policies. Also includes completing applications and participating in activities for transferring to a college or university of choice.
Recommendation: Consult with a counselor or advisor prior to enrolling in this course. Completion of STU 107, 109, or 109A is strongly recommended.
Offered: Fall, Spring.

STU 220 Employment Success Strategies
3 cr. hrs. 3 periods (3 lec.)
Exploration of the world of work and success in the modern workplace. Includes the nature of the modern workplace, skills needed to find a job and succeed, assessment of individual skill levels, personal plans for developing employment success skills, practice of employment success skills, and traditional and modern employment search strategies.
Information: STU 220A, 220B, and 220C together constitute STU 220.
Offered: May not be offered this year, check class schedule.

STU 220A Employment Strategies: How to Succeed in the Modern Workplace
1 cr. hrs. 1 periods (1 lec.)
Exploration of the world of work and success in the modern workplace. Includes the nature of the modern workplace, skills needed to find a job, and achievement of success in the workplace.
Information: STU 220A, 220B, and 220C together constitute STU 220.
Offered: May not be offered this year, check class schedule.

STU 220B Employment Success Strategies: Assessing & Developing Skills
1 cr. hrs. 1 periods (1 lec.)
Continuation of STU 220A. Includes assessment of individual skill levels, personal plans for developing employment success skills, and practice of employment success skills.
Information: STU 220A, 220B and 220C together constitute STU 220.
Offered: May not be offered this year, check class schedule.
STU 220C Employment Success Strategies: New Job Search
1 cr. hrs. 1 periods (1 lec.)
Continuation of STU 220B. Includes traditional and modern employment search strategies.
Offered: May not be offered this year, check class schedule.

STU 230 Dynamics of Leadership
3 cr. hrs. 3 periods (3 lec.)
Training in leadership philosophy and application. Includes the changing nature of leadership, vision and mission, strategic planning, team building and group dynamics, managing conflict, anticipating and responding to change, complex systems, multiculturalism ethics, power and privilege, self-assessment of leadership skills and characteristics, personal definition and philosophy, wellness and renewal, communication skills, presentation and facilitation skills, and designing and completing a leadership project.
*Information: Same as MGT 230.*
Offered: Fall, Spring.

STU 240 Exploring Leadership through Community Engagement
3 cr. hrs. 3 periods (3 lec.)
Leadership experience through supervised service learning and community involvement. Includes personal leadership attributes, relational and service models of leadership, personal vision, community leadership models, leadership awareness, community dynamics, community activities, evaluation, and portfolio development. Also includes participation in a community and/or college service learning project.
*Recommendation: Successful completion of REA 091 and STU 230, or other meaningful leadership experiences.*
*Information: Consent of the Instructor or Advisor is required before registering for this course. Intended for University of Arizona transfer. This course fulfills some of the requirements for the Pima Leadership Institute. See the course instructor for additional information. STU 240A, 240B, and 240C together constitute STU 240.*
Offered: May not be offered this year, check class schedule.

STU 240A Exploring Leadership through Community Engagement: Personal Engagement
1 cr. hrs. 1 periods (1 lec.)
Leadership experience through supervised service learning and community involvement. Includes personal leadership attributes, personal vision, and leadership awareness. Also includes community activities, evaluation, and portfolio development.
*Recommendation: Successful completion of REA 091 and STU 230, or other meaningful leadership experiences.*
*Information: Consent of the instructor or advisor is required before registering for this course.*
*Information: This course fulfills some of the requirements for the Pima Leadership Institute. See the course instructor for additional information.*
*Information: STU 240A, 240B, and 240C together constitute STU 240.*
Offered: Fall, Spring.

STU 240B Exploring Leadership through Community Engagement: Social Change
1 cr. hrs. 1 periods (1 lec.)
Leadership experience through supervised service learning and community involvement. Includes relational and service models of leadership, community leadership models, community dynamics, and community activities. Also includes participation in a community and/or college service learning project.
*Recommendation: Successful completion of REA 091 and STU 230, or other meaningful leadership experiences.*
*Information: Consent of the instructor or advisor is required before registering for this course.*
*Information: This course fulfills some of the requirements for the Pima Leadership Institute. See the course instructor for additional information.*
*Information: STU 240A, 240B, and 240C together constitute STU 240.*
Offered: Fall, Spring.

STU 240C Exploring Leadership through Community Engagement: Global Leadership
1 cr. hrs. 1 periods (1 lec.)
Leadership experience through supervised service learning and community involvement. Includes personal leadership attributes, leadership awareness, community dynamics, community activities, and evaluation. Also includes participation in a community and/or college service learning project.
*Recommendation: Successful completion of REA 091 and STU 230, or other meaningful leadership experiences.*
*Information: Consent of the instructor or advisor is required before registering for this course.*
*Information: This course fulfills some of the requirements for the Pima Leadership Institute. See the course instructor for additional information.*
*Information: STU 240A, 240B, and 240C together constitute STU 240.*
Offered: Fall, Spring.
STU 250 Transitional Resiliency
3 cr. hrs. 3 periods (3 lec.)
A study of the current research on resiliency, learning, and leadership in an integrative manner that fosters individual leadership. Includes exploration of the physical, psychological, and social systems of resiliency, psychological principles applied to learning and instructional design, and analysis of readings addressing practical and theoretical leadership principles. A model of a whole task approach to blend objectives and learning concepts in various contexts will be utilized.
Information: This course is designed for students who are veterans of the military.
Offered: Fall, Spring.

Surface Mining Technology
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

SMT 101 Mine Safety
1 cr. hrs. 1 periods (1 lec.)
Introduction to mine safety for new miners. Includes the use and application of safety gear. Also includes safety procedures prescribed by the Mine Safety and Health Administration (MSHA) for new miners.
Offered: Contact department at 206-5098.

SMT 102 Introduction to Hydraulics and Pneumatics
2 cr. hrs. 3 periods (1 lec., 2 lab)
Principles, components, symbols, and applications of hydraulic and pneumatic systems. Includes system development and troubleshooting; hydraulic and pneumatic components; and flow diagrams for particular applications. Also includes troubleshooting procedures for systems, system components, and assemblies.
Offered: Contact department at 206-5098.

SMT 103 Basic Mine Welding
4 cr. hrs. 6 periods (2 lec., 4 lab)
Procedures and techniques used in arc and oxyacetylene mine welding. Includes surface health, safety, and environmental practices, welding terminology, and arc and oxyacetylene welding equipment. Also includes proper welding procedures for arc and oxyacetylene, arc and oxyacetylene steel welding, welding machines and polarities, filler metal identification, welding positions, and oxyacetylene cutting.
Offered: Contact department at 206-5098.

SMT 104 Advanced Mine Welding and Fabrication
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, and layout techniques. Also includes hand-held power tool safety and use, large power tool safety and use, drawing interpretation, and welding projects.
Prerequisite(s): SMT 103.
Offered: Contact department at 206-5098.

SMT 106 Basic Rigging for the Mines
1 cr. hrs. 1 periods (1 lec.)
Rigging hardware used in mines and for surface mine equipment. Includes safety, rigging equipment, inspection, crane hand signals, estimating an object, and common rope knots. Also includes types of derricks and cranes, and proper equipment use.
Offered: Contact department at 206-5098.

SMT 110 Diesel Engines
4 cr. hrs. 6 periods (2 lec., 4 lab)
Theory and operation of diesel combustion engines common to heavy equipment used in surface mining. Includes diagnosis, engine rebuilding, and performance testing.
Offered: Contact department at 206-5098.

SMT 111 Diesel Electrical
3 cr. hrs. 4 periods (2 lec., 2 lab)
Theory and diagnosis of diesel electrical systems. Includes diesel starting, charging, accessory electrical systems and components, malfunctions, troubleshooting, and repair. Also includes various industry standard diagnostic electrical equipment and testing techniques.
Offered: Contact department at 206-5098.

SMT 112 Diesel Fuel Systems
3 cr. hrs. 4 periods (2 lec., 2 lab)
Theory, diagnosis and service of hydro-mechanical and electronic diesel fuel systems. Includes how to analyze fuel system components, and system operational characteristics. Also includes testing and service procedures of diesel fuel systems common to mining equipment.
Offered: Contact department at 206-5098.
SMT 120 Advanced Diesel Engines
3 cr. hrs. 5 periods (2 lec., 3 lab)
Concepts and techniques related to heavy duty diesel engine fuel, compression, air induction, and exhaust systems,
diagnosis and repair of mechanical engines. Includes how to isolate and repair mechanical engine, fuel, and air induction
systems. Also includes how to use industry standard tooling and repair information.
Offered: Contact department at 206-5098.

SMT 121 Steering, Suspension & Brakes for Mining Vehicles
2 cr. hrs. 3 periods (1 lec., 2 lab)
Theory, diagnosis, and repair of heavy equipment suspension, steering and brake systems of mining vehicles. Includes
tires and wheels, steering components, suspension types, and hydraulic and air brake systems construction and operation.
Also includes diagnostic and service techniques of suspension, steering and braking systems.
Offered: Contact department at 206-5098.

SMT 130 Industrial Shop Practices
3 cr. hrs. 5 periods (1 lec., 4 lab)
Concepts and techniques for industrial repair and maintenance shops. Includes safe and efficient use of hand and power
tools, fine measurement, tool maintenance and sharpening.
Offered: Contact department at 206-5098.

SMT 131 Industrial Pump Maintenance and Repair
3 cr. hrs. 5 periods (1 lec., 4 lab)
Concepts and techniques to maintain and repair pumps used in the surface mining industry. Includes pump construction,
operation, application and troubleshooting.
Offered: Contact department at 206-5098.

SMT 132 Industrial Valve Maintenance and Repair
3 cr. hrs. 5 periods (1 lec., 4 lab)
Concepts and techniques for valve construction, operation, and associated piping systems found in the surface mining
industry. Includes assembly and disassembly of valves, common causes of valve failure and troubleshooting techniques.
Offered: Contact department at 206-5098.

SMT 140 Bulk Materials Handling
3 cr. hrs. 5 periods (1 lec., 4 lab)
Safe operation, maintenance, and repair of industrial materials handling machinery. Includes conveyors, feed and
discharge devices, screens, and crushers.
Offered: Contact department at 206-5098.

SMT 142 Machinery Maintenance and Troubleshooting
3 cr. hrs. 5 periods (1 lec., 4 lab)
Systematic methods to identify causes of mechanical failure. Includes use of predictive methods to prevent mechanical
failure and maximize machinery life.
Offered: Contact department at 206-5098.

SMT 150 Electricity and Electronics
4 cr. hrs. 6 periods (2 lec., 4 lab)
Basic principles of electricity and electronics theory with a heavy emphasis on industrial applications. Includes the use of
electrical theory, circuits, electrical measurements, schematics, wiring diagrams, and symbols, and practical mining
applications.
Offered: Contact department at 206-5098.

SMT 151 DC Electrical Systems
3 cr. hrs. 5 periods (1 lec., 4 lab)
Introduction to Direct Current (DC) theory and systems emphasizing industrial applications and setting. Includes batteries,
DC circuits, electrical test and measuring equipment, various conductors, semiconductors, and insulators. Also includes
how to develop troubleshooting skills.
Offered: Contact department at 206-5098.

SMT 152 AC Electrical Systems
3 cr. hrs. 5 periods (1 lec., 4 lab)
Introduction to alternating current (AC) theory and systems in industrial application settings. Includes transformers,
electrical measuring test equipment, single and polyphase motors, AC generation. Also includes how to troubleshoot
electrical systems.
Offered: Contact department at 206-5098.

SMT 153 Conduits and Raceways
3 cr. hrs. 5 periods (1 lec., 4 lab)
Introduction to conduit and raceway installation and bending with heavy emphasis on industrial applications and settings.
Includes conduit types sizes, tools and equipment used to cut, bend, thread and install electrical conduit. Also includes
hands-on application to wire pulling and termination methods.
Offered: Contact department at 206-5098.
SMT 190 Surface Mining Technology Internship I
2 cr. hrs. 10 periods (10 lab)
Supervised field experience in a surface mine. Includes discussion and application of concepts relevant to the surface mining technology field. Also includes individualized internship placement to develop personal professional skills in either diesel technology, electrical technology or industrial plan technology.

Information: This course requires admission to the SMT program before enrolling.
Information: Requires students to meet with the instructor and on-site supervisor.
Offered: Contact department at 206-5098.

SMT 191 Surface Mining Technology Internship II
2 cr. hrs. 10 periods (10 lab)
Supervised field experience with a participating surface mine to expand career interests and apply subject knowledge relevant to the surface mining technology field. Includes individualized internship placement to develop personal and professional skill in either diesel technology, electrical technology or industrial plan technology.

Information: Designed for students in their second semester of course work in the Surface Mining Technology program.
Offered: Contact department at 206-5098.

SMT 205 Blueprint Interpretation for Surface Mining
3 cr. hrs. 3 periods (3 lec.)
Interpretation of construction documents and drawings. Includes basic drafting and blueprint reading skills and their application to construction, and component, basic electrical, and basic welding print reading for surface mining. Also includes development of the learner's visualization and plan interpretation skills with respect to specific concepts.
Offered: Contact department at 206-5098.

SMT 210 Heating and Air Conditioning for Mining Vehicle
3 cr. hrs. 4 periods (2 lec., 2 lab)
Diagnosis and repair of heavy equipment heating, ventilation, and air conditioning (HVAC) systems. Includes personal and environmental safety, system components, system diagnosis and repair. Also includes refrigerant recovery, recycling and handling.
Offered: Contact department at 206-5098.

SMT 220 Mining Equipment Drivetrain
3 cr. hrs. 4 periods (2 lec., 2 lab)
Procedures and techniques to service and repair mining equipment, manual and automatic transmissions, and the drive-train. Includes theory, diagnosis, and service of clutches, driveline, synchro transmissions and final drives, torque converters, and automatic transmission. Also includes proper repair and service of assemblies for standard and automatic transmissions.
Offered: Contact department at 206-5098.

SMT 260 Motors and Motor Control for Mining
3 cr. hrs. 4 periods (2 lec., 2 lab)
Theory, diagnosis and the repair of various motors used in surface mining and operation of heavy mining equipment. Includes construction and operation of single phase and three phase induction motors, run capacitors, start capacitors, contactors, motor starters, relays, and over current protection devices. Also includes diagnostic, installation and service techniques.

Prerequisite(s): SMT 150 and 152, or permission of department.
Offered: Contact department at 206-5098.

SMT 261 Programmable Logic Controllers
3 cr. hrs. 4 periods (2 lec., 2 lab)
Concepts and techniques to use programmable logic controls. Includes control systems, modes, inputs and outputs and final control elements. Also includes mining equipment applications.
Offered: Contact department at 206-5098.

SMT 290 Surface Mining Technology Internship III
3 cr. hrs. 15 periods (15 lab)
Supervised field experience with a participating surface mine to expand career interests and apply subject knowledge relevant to the surface mining technology field. Includes individualized internship placement to develop personal and professional skill in either diesel technology, electrical technology or industrial plan technology.

Information: Designed for students in their third semester of course work in the Surface Mining Technology program.
Offered: Contact department at 206-5098.

SMT 291 Surface Mining Technology Internship IV
3 cr. hrs. 15 periods (15 lab)
Supervised field experience with a participating surface mine to expand career interests and apply subject knowledge relevant to the surface mining technology field. Includes individualized internship placement to develop personal and professional skill in either diesel technology, electrical technology or industrial plan technology.

Information: Designed for students in their fourth semester of course work in the Surface Mining Technology program.
Offered: Contact department at 206-5098.
**Technology**

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**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.
Offered: Fall, Spring.

**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 122 or TEC 111.
**Corequisite(s)**
Offered: Fall, Spring.

**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.
**Offered:** Spring.

**TEC 104 Introduction to Robotics**
3 cr. hrs. 4 periods (2 lec., 2 lab)
Principles of mechanical systems, electronics, and programming as applied to the design, build, and mobilization of remote control and autonomous robots. Includes hardware familiarization, building a robot, programming, implementing the hardware, basic gears, specialized gears and racks, implementing specialized hardware, interfacing the hardware, programming with RCX, and programming commands. Also includes preparation for competition, new ideas for design, preparing the program, testing and competing with Roverbot, new ideas for design, challenging design, and competing with Inventorbot.
Offered: Fall.

**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.
Offered: Fall.

**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.
**Information:** TEC 111A, 111B, and 111C together constitute TEC 111.
Offered: Fall.

**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.
**Information:** TEC 112A, 112B, and 112C together constitute TEC 112.
Offered: Spring.
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 122 or TEC 112 or required score on the mathematics assessment test.
Offered: Spring.

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.
Offered: Spring.

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.
Offered: Fall.

TEC 121LB Basic Electric and Magnetic Properties Lab
1 cr. hrs. 3 periods (3 lab)
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. This is the Lab portion of TEC 121.
Prerequisite(s): TEC 100 and 111.
Corequisite(s): TEC 121.
Offered: Fall.

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, 121.
Corequisite(s): TEC 122LB.
Offered: May not be offered this year, check class schedule.

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, 121.
Corequisite(s): TEC 122.
Offered: May not be offered this year, check class schedule.

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 inverters, digital measurements and test equipment, memory, error detection, convertors, programmable logic arrays, microprocessor basics, and technical information.
Corequisite(s): TEC 123LB.
Offered: Fall.

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.
Offered: Fall.
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, waveforming, and transmission lines at high AC frequencies.
Prerequisite(s): TEC 113 and 121.
Corequisite(s): TEC 125LB.
Offered: Spring.

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.
Offered: Spring.

TEC 126 Electronics Construction and Assembly
3 cr. hrs. 4 periods (2 lec., 2 lab)
Basic skills working on construction and assembly of electronic equipment. Includes soldering through-hole and surface mount components, reading and interpreting internal electronic wiring schematic, 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.
Offered: Fall.

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, 111.
Corequisite(s): TEC 126.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall.

TEC 128LB Electronic Measurements Lab
1 cr. hrs. 2 periods (2 lab)
This is the Lab portion of TEC 128.
Corequisite(s): TEC 128.
Offered: Fall.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

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 inkjet 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.
Offered: May not be offered this year, check class schedule.
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.
Offered: May not be offered this year, check class schedule.

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.
Offered: May not be offered this year, check class schedule.

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.
Offered: Spring.

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 122, 125 and 221.
Corequisite(s): TEC 222LB.
Offered: Spring.

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.
Offered: Spring.

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.
Offered: Spring.

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.
Offered: Spring.

TEC 228 RF and Microwave Devices
3 cr. hrs. 3 periods (3 lec.)
Properties, applications, measurements, and specifications of electronic communications components and systems at RF and microwave frequencies. Includes an overview, RF components, cellular phone devices, satellite devices, measurements, and code of federal regulations.
Prerequisite(s): TEC 122, 124, 125 and 221.
Corequisite(s): TEC 228LB.
Offered: May not be offered this year, check class schedule.
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.  
Offered: May not be offered this year, check class schedule.

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 maybe waived with consent of instructor.  
Offered: May not be offered this year, check class schedule.

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.  
Offered: May not be offered this year, check class schedule.

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, 123.  
**Corequisite(s):** TEC 250LB.  
Offered: Fall.

TEC 250LB Digital Devices Lab  
1 cr. hrs. 3 periods (3 lab)  
This is the Lab portion of TEC 250.  
**Corequisite(s):** TEC 250.  
Offered: Fall.

TEC 251 Analog Circuits  
3 cr. hrs. 3 periods (3 lec.)  
Advanced analog circuits used in current digital systems. Includes logic and number system review, methods of representing, logical functions, combinatorial logic families, power supply requirements, input characteristics, outputs, and voltages.  
**Prerequisite(s):** TEC 221.  
**Corequisite(s):** TEC 251LB.  
Offered: Fall.

TEC 251LB Analog Circuits Lab  
1 cr. hrs. 3 periods (3 lab)  
This is the Lab portion of TEC 251.  
**Corequisite(s):** TEC 251.  
Offered: Fall.

TEC 286 Fiber Optics Installation and Testing  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Installation and use of optical fibers and related equipment in the optical industry. Includes optics theory, fiber types, cable assembly and installation, testing of cables, special equipment, and survey of applications.  
**Prerequisite(s):** TEC 103.  
Offered: May not be offered this year, check class schedule.

TEC 287 Laser Fundamentals  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Fundamentals of lasers and how they are built and used in industry. Includes laser safety, properties of laser light, introduction to quantum mechanics, cavity design, effects of extra cavity feedback and stability, laser types and applications, cooling, and assembly and testing techniques.  
**Prerequisite(s):** TEC 103.  
Offered: Fall.
TEC 288 Optical Testing
4 cr. hrs. 6 periods (2 lec., 4 lab)
Common techniques and equipment for testing of optical systems and components. Includes optical testing theory, measurement of paraxial parameters, interferometers, non-interferometric tests, and surface profiling.

Prerequisite(s): TEC 103.
Offered: May not be offered this year, check class schedule.

TEC 290 Technology Education Field Experience
1-6 cr. hrs. 5-30 periods (5-30 lab)
Participation in a high technology placement to provide experience in the practical application of classroom instruction. Includes practical experience, observation of business practices, job skills preparation, and an emphasis on work-place behaviors.
Information: Consent of instructor is required before enrolling in this course.
Information: May be taken two times for a maximum of six credit hours.
Offered: May not be offered this year, check class schedule.

Theater

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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 character.
Information: May be taken five times for a maximum of fifteen credit hours.
Offered: Fall, Spring.

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 100 or 101 or 102.
Information: Student are expected to attend and critique a minimum of three theatrical performances.
Information: Students may, at the discretion of the 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.
Offered: Fall, Spring, Summer.

THE 110 Movement/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, as well as the history of dance and movement for musical theater, and exercises.
Offered: Fall, Spring.

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, paint, materials handling, measuring, construction, assembly, finishing, rigging, and painting techniques.
Corequisite(s): THE 113.
Offered: Fall, Spring.

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, scenery shifting, and property organization, distribution, and security.
Corequisite(s): THE 111.
Offered: Fall, Spring.

THE 115 Make-Up
1 cr. hrs. 2 periods (2 lab)
Principles and practice of straight and character make-up under various conditions. Includes special effects, clown make-up and principles of mask-making.
Offered: May not be offered this year, check class schedule.
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, color rendering techniques, study of color theories, and study of computer design applications for theatrical drafting.
Offered: Spring.

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: May be taken four times for a maximum of eight credit hours.
Information: Consent of instructor required before enrolling in this course.
Offered: Fall, Spring.

THE 135 Stage Combat
2 cr. hrs. 4 periods (1 lec., 3 lab)
A basic study in the execution of staged violence for practical use in theater productions. Includes unarmed fighting, armed combat, and skills.
Offered: May not be offered this year, check class schedule.

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 origins of theater, physical theater, tragic and comic theories and genres, Greek and Roman tragedies and comedies, neo-classical drama, and major styles and specific plays.
Offered: Fall.

THE 141 History of Theater Since the 18th Century
3 cr. hrs. 3 periods (3 lec.)
Survey of theater, drama, and audiences from the 18th century to the present. Includes physical theater in the 19th and 20th centuries; styles, forms, and genres; and new styles of performance and types of dramas.
Offered: May not be offered this year, check class schedule.

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, character analysis, playing a character, and monologues and scenes.
Offered: Fall, Spring.

THE 151 Introduction to Acting II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of THE 149. Includes character analysis and development exercises, analysis of scenes and plays, critiques of two productions, acting vocabulary and its application, sub-texts to a scene, exercises in emotional investment; and analyzing, playing intentions, and super objectives in a script.
Prerequisite(s): THE 104 or concurrent enrollment and THE 149.
Offered: Fall, Spring.

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.
Offered: Fall, Spring.

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.
Offered: Fall.
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.
Offered: Fall.

THE 223 Scene Design
3 cr. hrs. 5 periods (2 lec., 3 lab)
Principles of scene design for various types of stage and models of productions. Includes historical context, theater architecture, scenic elements, design process and research, development of working drawings, perspective rendering, color use, period styles in furniture and architecture, and script analysis. Also includes cost estimates, material choices, advanced construction techniques, paint mixing and application techniques, stage furniture overview, and set dressing and finishing.

Offered: May not be offered this year, check class schedule.

THE 245 Principles of Dramatic Structure  SUN# THE 2220
3 cr. hrs. 3 periods (3 lec.)
Examination of the structural elements of major dramatic forms and styles. Includes role of the dramaturge; examination of major themes; analysis of dramatic forms, styles, and actor-audience relationships; visualizing a text; and character analysis. Also includes analysis of text for language and poetic elements, dramatic criticism, and play production as a collaborative effort.

Offered: Spring.

THE 250 Intermediate Acting I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Intermediate Acting I 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 participation in physical and vocal exercises and improvisations, exercises to expand actor's instruments, study of Shurtleff theory, nuances of auditions, and technique of voice over. Also includes performance of audition monologues, audition scenes, audition songs, scenes for an audition, commercial scripts, and oral report on audition experiences.

Prerequisite(s): THE 103, 111 or concurrent enrollment, 149.
Offered: Fall.

THE 251 Intermediate Acting II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Performance-oriented class focuses on the practice and theory of pre-realist styles of acting, and focuses on Shakespeare through the use of verse and prose. Includes the performance and analysis of Commedia del Arte, Moliere (Neo-classicism), and Restoration.

Prerequisite(s): THE 104 and 111 or concurrent enrollment, and THE 151 or 250.
Offered: Spring.

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: May be taken eight times for a maximum of eight credit hours.
Information: Consent of instructor is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

Therapeutic Massage
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

TMA 101 Introduction to Massage Therapy
3 cr. hrs. 3 periods (3 lec.)
Survey of massage therapy practice including history, overview of bodywork systems, benefits and indications of massage, and legal requirements of practice in Arizona.

Prerequisite(s): WRT 100 with a C or better or the required score on the Writing assessment test.
Offered: Fall, Spring.

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.

Offered: Fall, Spring.
TMA 122 Business Management for Massage and Bodywork Practitioners
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.
Recommendation: Concurrent enrollment in TMA 290.
Offered: Fall, Spring, Summer.

TMA 125 Business, Ethics and Professionalism for Massage Therapy
4 cr. hrs. 4 periods (4 lec.)
Overview of business, ethics, and professionalism related to an effective, successful massage therapy and bodywork practice. Includes business start up and development, business plan, financial management, marketing, and communications. Also includes general ethical principles of practice, professional dress and conduct, boundaries, and ethical business practices.
Prerequisite(s): WRT 100 with a grade of C or better, or required score on the Writing assessment test.
Offered: Spring.

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. Study of the human osseous and muscular structure. Emphasis on normal movement patterns and the origin, insertion, and function of the muscular system.
Prerequisite(s): BIO 160, PSY 101, TMA 101, TMA 120, WED 110, and WED 111 with a grade of C or better, and WRT 101 with a grade of C or better or required score on the Writing assessment test.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Fall.

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. Application of advanced principles and techniques of trigger point therapy, muscle energy technique, stretching, hydrotherapy protocols, hot and cold applications, reflexology, and corporate massage. Study of the human osseous and muscular structure. Emphasis on normal movement patterns and the origin, insertion, and function of the muscular system.
Prerequisite(s): TMA 201IN with a grade of C or better.
Information: Course restricted to students admitted to program.
Information: IN is the integrated version of the course with the lab and lecture taught simultaneously.
Offered: Fall.

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 201.
Prerequisite(s): Requires concurrent registration with TMA 202.
Offered: Fall.

TMA 203IN Therapeutic Massage Practices III
6 cr. hrs. 9 periods (3 lec., 6 lab)
Refinement and integration of technical skills, psychosocial competencies, and role identity. Exploration of techniques to assess and facilitate range of motion and functions; purpose, benefits, indications, and contraindications of therapeutic massage for specific neuro-musculoskeletal disorders/injury and special populations. Application of massage techniques with therapist’s pre- and post-client evaluations of the client. Adaptation of massage techniques for special populations.
Prerequisite(s): TMA 202IN, 210, and 215 with a grade of C or better.
Information: Course restricted to students admitted to program.
Information: IN is the integrated version of the course with the lecture and lab taught simultaneously.
Offered: Spring.

TMA 203LC Therapeutic Massage Practice Clinical Lab II
1 cr. hrs. 3 periods (3 lab)
Students practice and perfect the application of Swedish and Deep Tissue massage techniques in a supervised, supportive learning environment in an onsite clinical setting. Course reinforces massage theory and practice learned in TMA 202.
Prerequisite(s): Requires concurrent registration with TMA 203.
Offered: Spring.

TMA 209 Introduction to Pathology
2 cr. hrs. 2 periods (2 lec.)
Introduces the student to basic disease processes and common pathologies associated with each of the organ systems.
Prerequisite(s): BIO 160 with a grade of C or better.
Offered: May not be offered this year, check class schedule.
TMA 210 Fundamentals of Kinesiology
3 cr. hrs. 4 periods (2 lec., 2 lab)
The course will provide a survey of the biology of movement including a review of the skeletal and muscular systems, planes of movement and terms of anatomical references; structure and functions of joints; origins, insertions and actions of muscles of the trunk and limbs. Lab portion will include demonstration and analysis of normal and abnormal movement.
Prerequisite(s): BIO 160.
Offered: Spring.

TMA 211 Introduction to Human Systems Pathology
3 cr. hrs. 3 periods (3 lec.)
The course will introduce the student to basic disease processes and common pathologies associated with each of the organ systems.
Prerequisite(s): BIO 160.
Offered: May not be offered this year, check class schedule.

TMA 212 Pathology for Massage and Bodywork
1 cr. hrs. 1 periods (1 lab)
Provides an overview of pathology as related 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): Current Therapeutic Massage Program students must have completed TMA 211 with a grade of “C” or better.
Information: Can be taken by licensed massage therapists as an enrichment elective or continuing education hours.
Offered: May not be offered this year, check class schedule.

TMA 214 Pregnancy Massage
1 cr. hrs. 1 periods (1 lec.)
Basic information and techniques for performing massage on pregnant clients. Includes information about body changes during pregnancy, benefits and cautions of pregnancy massage, and techniques for common discomforts during pregnancy. Also includes pre-session considerations, setting and supplies for pregnancy massage, and suggestions for documentation.
Prerequisite(s): Must be an active massage student or licensed massage therapist.
Information: Designed as a TMA elective or continuing education for licensed massage therapists.
Offered: May not be offered this year, check class schedule.

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): BIO 160 and TMA 101 with a grade of C or better.
Offered: May not be offered this year, check class schedule.

TMA 240 Therapeutic Massage National Certification Exam Preparation
2 cr. hrs. 2 periods (2 lec.)
Course prepares students for National Certification Exam in Therapeutic Massage and Bodywork. Course includes anatomy, physiology, kinesiology and pathology of body systems; Asian and non-Western bodywork approaches; massage and bodywork assessment, theory and application; and professional standards, ethics, and business and legal practices. Also includes effective study approaches and test taking strategies.
Information: Offered for current massage students or licensed massage therapists or bodyworkers.
Offered: May not be offered this year, check class schedule.

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): Completion of TMA 101, 125, 201IN, 202IN, 202LC, 203IN, 203LC, 210, 215, and WED 110, 111 with a grade of “C” or better.
Offered: Spring.
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): Completion of TMA 101, 125, 201IN, 202IN, 202LC, 203IN, 203LC, 210, 215 and WED 110, 111 with a grade of "C" or better.
Information: May be taken three times for a maximum of three credit hours.
Information: Students enrolling for the first time must take the course concurrently with TMA 290LC.
Offered: May not be offered this year, check class schedule.

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.
Information: Course content and performance objectives will be kept on file.
Information: May be taken three times for a maximum of three credit hours.
Offered: May not be offered this year, check class schedule.

Tohono O’odham
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

THO 101 Elementary Tohono O’odham I
4 cr. hrs. 4 periods (4 lec.)
Skill development to provide proficiency in basic communication in the Tohono O’odham language. Includes listening, speaking, reading, and writing. Also includes an emphasis on examination of Tohono O’odham cultural traditions.
Offered: Spring.

THO 102 Elementary Tohono O’odham II
4 cr. hrs. 4 periods (4 lec.)
Continuation of THO 101. Includes increased proficiency in listening, speaking, reading and writing and continued study of Tohono O’odham cultural traditions.
Prerequisite(s): THO 101.
Offered: May not be offered this year, check class schedule.

Translation and Interpretation Studies
For courses numbered 098, 198, 298, see “Topic Courses” on page 286

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.
Offered: Fall, Spring.

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.
Prerequisite(s): SPA 254 and WRT 102.
Offered: Fall, Spring.
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.
Prerequisite(s): CSA 100 and TRS 101.
Information: CSA 100 may be waived if computer applications experience is documented. See an instructor.
Information: IN is the integrated version of the course with lecture and lab taught simultaneously.
Offered: Spring.

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.
Offered: Spring.

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.
Prerequisite(s): TRS 150.
Offered: Fall.

TRS 161 Medical Spanish and English Interpreting
3 cr. hrs. 3 periods (3 lec.)
Interpreting in a medical context. Includes interpreting in a medical setting, pronunciation of Spanish and English names and medical terms, Spanish and English medical terminology, bicultural medical communication, and regional dialects.
Information: This course assumes bilingual fluency in both English and Spanish.
Offered: Fall.

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.
Offered: Spring.

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.
Information: Consent of instructor is required before enrolling in this course.
Information: See the TRS instructor or department chair for more prerequisite information.
Offered: Spring.

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.
Prerequisite(s): TRS 202.
Information: Prerequisite(s) may be waived with consent of instructor.
Offered: Fall.

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.
Prerequisite(s): TRS 202.
Offered: Fall.
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.
Prerequisite(s): TRS 101, 102, 160.
Offered: Spring.

Travel/Tourism Operations
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

TVL 103 Geography for the Tourism Professional
3 cr. hrs. 3 periods (3 lec.)
Examination of tourist attractions and applied physical geography of global tourism destinations. Students will choose three of the following geographic areas on which to focus: North America, Mexico, Northern and Central Europe, East Africa, East Asia, France, Southern Europe, Alaska, Hawaii, and Hong Kong. Includes the Travel Institute’s Destination Specialist Certification Exam in the geographic areas studied.
Offered: Fall, Spring, Summer.

TVL 109 Survey of Leisure Products
3 cr. hrs. 3 periods (3 lec.)
Leisure travel components. Includes hotels, rental cars, AMTRAK, tours, and cruise accommodations.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.

TVL 209 Introduction to Tour Guiding
3 cr. hrs. 4 periods (3 lec., 1 lab)
Specific training for students interested in becoming a tour guide. Includes career opportunities, Destination Management Companies, managing tour groups, public speaking, and pre-tour planning. Also includes briefing tour members, tour guide policies and procedures, airport departure and arrival procedures, dealing with health and medical issues and other tour group problems, and preparing for a job interview.
Offered: May not be offered this year, check class schedule.

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.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring, Summer.
Truck Driver Training

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

TDT 116 Straight Truck and Bus Driver
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. Includes CDL preparation, driving conditions, pre-trip inspection, air brakes, hazardous materials, and city map reading, hours of service, backing, cargo handling, and transporting passengers.

Information: Admission to the Truck Driver Training Program is required before enrolling in this course.
Offered: Contact department at 206-2744.

TDT 117 Straight Truck and Bus Driver: Road and Range
1 cr. hrs. 3 periods (3 lab)
Techniques for the inspection and safe operation of a straight truck or bus. Includes pre-trip inspection, backing, basic control of left and right turns, progressive shifting, proficiency development, space and speed management, visual search and communication, extreme driving, and hazard perception.

Information: Admission to the Truck Driver Training Program is required before enrolling in this course.
Offered: Contact department at 206-2744.

TDT 118 Basic Vehicle Operations and Commercial Driver's License Req
5 cr. hrs. 5 periods (5 lec.)
Basic methods of safety operating a combination vehicle. Includes the operation of the air brake system and uncoupling a tractor and trailer, cargo handling including hazardous materials, the proper method of conducting a pre-trip inspection, completion of braking maneuvers, and trip planning. Familiarization of the USDOT regulations including hours of service and Commercial Driver's Licensing requirements. Also includes method of managing life as professional driver, managing speed effectively and responding to road and weather conditions.

Information: Admission to the Truck Driver Training Program is required before enrolling in this course.
Offered: May not be offered this year, check class schedule.

TDT 119 Basic Driving Maneuvers
3 cr. hrs. 3 periods (3 lec.)
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): Successful completion of TDT 118.
Information: Admission to the Truck Driver Training Program prior to registration. A valid Commercial Driver's License (CDL) permit will meet the prerequisite for TDT 118.
Offered: May not be offered this year, check class schedule.

TDT 120 Truck Driver Training Refresher
3 cr. hrs. 3 periods (3 lec.)
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.
Offered: Contact department at 206-2744.

Turkish

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

TUR 101 Elementary Turkish I
5 cr. hrs. 5 periods (5 lec.)
Introduction to the Turkish language and cultures. Includes basic oral and written forms, grammatical structures, interpersonal transactions, and geographical and cultural awareness.

Offered: May not be offered this year, check class schedule.

TUR 102 Elementary Turkish II
5 cr. hrs. 5 periods (5 lec.)
Continuation of TUR 101. Includes further development of oral and written forms, additional grammatical structures, interpersonal transactions, and geographical and cultural awareness. Also includes an emphasis on balancing more complex structures with active communication in the Turkish language.

Prerequisite(s): TUR 101 or equivalent.
Offered: May not be offered this year, check class schedule.
Veterinary Science

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

VSC 101 Introduction to Veterinary Science I
3 cr. hrs. 4 periods (2 lec., 2 lab)
Basic instruction in the comparative anatomy and physiology of mammals. Includes basic cell biology, tissue types and functions. Also includes major body systems and their roles in veterinary science.
Offered: Fall.

VSC 102 Introduction to Veterinary Science II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of VSC 101. Includes basic instruction in nutrition, diseases, surgery, and their roles in veterinary science. Also includes discussion of decision making in veterinary science.
Prerequisite(s): VSC 101.
Offered: Spring.

VSC 195 Introduction to Research in Veterinary Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Introduction to the methods of research in veterinary science. Includes scientific laboratory procedures, experimental design, scientific writing, scientific ethics, and current research in working laboratories.
Information: Three credit hours of Veterinary Science and consent of instructor are required before enrolling in this course.
Offered: Fall, Spring, Summer.

VSC 196 Independent Study in Veterinary Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Introductory study of a particular Veterinary Science subject or subjects to hone skills while working in an independent format.
Information: Three credit hours of Veterinary Science and consent of instructor are required before enrolling in this course.
Information: 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.
Offered: Fall, Spring, Summer.

VSC 290 Veterinary Science Internship
1-4 cr. hrs. 5-20 periods (5-20 lab)
Internship and work experience in a veterinary science field or laboratory. Includes setting, achieving, and evaluating goals for hands-on learning experiences in veterinary sciences. Also includes development of skills and knowledge needed to work in a veterinary science field or laboratory.
Information: Six credit hours of Veterinary Science and consent of instructor are required before enrolling in this course.
Offered: Fall, Spring, Summer.

VSC 295 Independent Research in Veterinary Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Experience in scientific laboratory research.
Prerequisite(s): VSC 195.
Information: Nine credit hours of Veterinary Science and consent of instructor are required before enrolling in this course.
Information: Specific content to be determined by student and instructor.
Offered: Fall, Spring, Summer.

VSC 296 Independent Research in Veterinary Science
1-3 cr. hrs. 1-3 periods (1-3 lec.)
Advanced study of a particular Veterinary Science subject or subjects to hone skills while working in an independent format.
Information: Consent of instructor is required before enrolling in this course.
Information: 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.
Offered: Fall, Spring, Summer.
# Veterinary Technology

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

## 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, 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.

**Corequisite(s):** VET 110, VET 130, VET 225.

*Information:* Admission to the Veterinary Technology program is required before enrolling in this course.

*Offered:* Fall.

## VET 105 Practical Wildlife Rehabilitation
3 cr. hrs. 7 periods (1 lec., 6 lab)
Introduction to the practical handling and rehabilitation of a variety of wild species with a state and nationally licensed wildlife rehabilitator. Includes skills, education and sponsored experience with several domestic species. Also includes the handling of some advanced species that will require a demonstration of competency.

*Information:* This is not a restricted course and is open to any student interested in wildlife. This course would be beneficial to Veterinary Technology, Wildlife Management or other biological science related majors. Additional immunizations may be required before enrolling in this course.

*Offered:* May not be offered this year, check class schedule.

## 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.

*Offered:* Fall, Spring, Summer.

## VET 107 Veterinary Practice Assistant II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of VET 106. Includes pharmacy, surgical, laboratory and imaging skills.

**Corequisite(s):** VET 106, VET 108.

*Information:* Consent of program faculty is required before enrolling in this course.

*Offered:* Fall, Spring, Summer.

## 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, 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.

*Information:* Consent of program faculty is required before enrolling in this course.

*Offered:* Fall, Spring, Summer.

## 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.

*Offered:* Fall.

## VET 111 Veterinary Nursing Procedures II
3 cr. hrs. 4 periods (2 lec., 2 lab)
Continuation of VET 110 with an emphasis on venipuncture, catherization, fluid therapy and basic dental care procedures. Includes complete physical examinations, wound management, CPR and first aid.

**Prerequisite(s):** VET 100, 110, 130 and 225.

**Corequisite(s):** VET 120, VET 131, VET 150.

*Offered:* Spring.
**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):** VET 100, 110, 130 and 225.  
**Corequisite(s):** VET 111, VET 131, VET 150.  
**Offered:** Spring.  

**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):** VET 111, 120, 131 and 150.  
**Corequisite(s):** VET 200, VET 211.  
**Offered:** Fall.  

**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.  
**Corequisite(s):** VET 100, VET 110, VET 225.  
**Information:** Admission to Veterinary Technology program is required before enrolling in this course.  
**Offered:** Fall.  

**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):** VET 100, 110, 130 and 225.  
**Corequisite(s):** VET 111, VET 120, VET 150.  
**Offered:** Spring.  

**VET 150 Pharmacology**  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Introduction to regulations of biologics and pharmaceuticals. Includes classification, dosage calculations, labeling, logging and packaging of drugs.  
**Prerequisite(s):** VET 100, 110, 130 and 225.  
**Corequisite(s):** VET 111, VET 120, VET 131.  
**Offered:** Spring.  

**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.  
**Offered:** Summer.  

**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.  
**Offered:** Fall, Spring, Summer.  

**VET 200 Anesthetic and Surgical Nursing**  
3 cr. hrs. 4 periods (2 lec., 2 lab)  
Techniques and procedures involving surgery and anesthesia. Includes preparation and identification of instruments and equipment, routine surgical procedures and handling of instruments and supplies during surgery. Also includes anesthesia induction and monitoring, post surgical care, clean up and surgical record keeping.  
**Prerequisite(s):** VET 111, 120, 131 and 150.  
**Corequisite(s):** VET 121, VET 211.  
**Offered:** Fall.
VET 205 Radiology and Imaging Techniques
3 cr. hrs. 4 periods (2 lec., 2 lab)
Principles and techniques of radiographic imaging. Includes the production of X-rays, radiographic equipment, safety measurement, and radiographic quality. Also includes diagnostic radiographs, positioning of patients, darkroom techniques and X-ray processing.

Prerequisite(s): VET 121, 200 and 211.
Corequisite(s): VET 210, VET 220.

Offered: Spring.

VET 210 Veterinary Nursing Procedures: Large Animal Care
2 cr. hrs. 5 periods (1 lec., 4 lab)
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 205, VET 220.

Offered: Spring.

VET 211 Veterinary Nursing Procedures: Avian, Exotic, and Lab Animals
2 cr. hrs. 5 periods (1 lec., 4 lab)
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 mentoring techniques; teamwork; communications; and health problem assessment involving kennel management.

Prerequisite(s): VET 111, 120, 131, 150.
Corequisite(s): VET 121, VET 200.

Offered: Fall.

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): VET 121, 200 and 211.
Corequisite(s): VET 205, VET 210.

Offered: Fall.

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.

Offered: Fall.

VET 230 VTNE and AZ State Veterinary Medical Examining Board Review
3 cr. hrs. 3 periods (3 lec.)
Preparation for a Veterinary Assistant or non-certified Technician to sit for the national and state Veterinary Technician Board Exams. Includes a review of the Arizona Revised Statutes and Administrative Rules pertaining to Veterinary medicine and content review of all pertinent medical subjects. Also includes test taking skills, test anxiety techniques and practice board exams.

Offered: Spring.

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: Completion of all VET Courses is required before enrolling in this course.

Offered: Spring.
Welding

For courses numbered 098, 198, 298, see "Topic Courses" on page 286

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.
Offered: Fall, Spring, Summer.

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, blueprint interpretation, introduction to estimating, bonds and insurance, materials specifications, boilers, structural steel systems, and steel fabrication checklist.
Prerequisite(s): MAT 082 or required score on math assessment test.
Offered: Fall, Spring, Summer.

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, oxyacetylene bronze build-up, arc welding safety practices, arc welding procedures, basic joint design, currents and polarities, arc welding machines and electrodes, and arc designing for sculpture.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

WLD 161 SMAW Plate Certification Welding
2 cr. hrs. 4 periods (1 lec., 3 lab)
Advanced procedures in test plate welding certification using the American Welding Society Code D1.1. Includes test codes, weld test coupon evaluation, preparation of test plates, V-groove test plate welding, and evaluation of proper welding procedures.
Prerequisite(s): WLD 160.
Information: Prerequisite maybe waived with welding industry experience.
Offered: May not be offered this year, check class schedule.

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.
Offered: Spring.

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, equipment operation and 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.
Recommendation: WLD 110.
Information: Prerequisite maybe waived with welding industry experience.
Offered: Fall, Spring, Summer.
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, power source types  
and controls, welding currents and polarities, tungsten electrodes, shielding gases, mild steel welding, aluminum welding,  
stainless steel welding, and GTAW certification.  
**Recommendation:** WLD 110 or welding industry experience.  
**Information:** Prerequisite maybe waived with welding industry experience.  
**Offered:** Fall, Spring.

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 math assessment at MAT 092 or higher.  
**Recommendation:** Completion of WLD 160 before enrolling in this course.  
**Information:** Prerequisites may be waived for appropriate work experience. See a welding instructor or advisor for  
prerequisite information.  
**Offered:** Spring.

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.  
**Offered:** Fall, Spring.

WLD 297 Welding Seminar  
.25-4 cr. hrs. .25-4 periods (.25-4 lec.)  
Welding job-related training. Includes presentations and development of skills in a given area and topics of timely or  
limited interest.  
**Information:** Consent of instructor is required before enrolling in this course.  
**Offered:** May not be offered this year, check class schedule.

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**Wellness Education**  
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

**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.  
**Offered:** Fall, Spring.

**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.  
**Offered:** Spring.

**WED 120 Introduction to Energy Healing and Reiki**  
1 cr. hrs. 1 periods (1 lec.)  
An overview of energy modalities, how energy works, how energy can be manifested and used for healing, and the  
personal responsibilities and ethical considerations for a practitioner of healing. Includes an introductory concentration on  
Reiki as a concept of health and wellness, and the essence, history and levels of Reiki.  
**Information:** Applicable as an elective course for the Therapeutic Massage program and as continuing education hours for  
health and wellness professionals.  
**Offered:** Fall, Spring.
WED 121 Reiki I
1 cr. hrs. 1 periods (1 lec.)
Instruction and coaching in the Usui Method of Reiki, Level I. Includes review of concepts presented in WED 120 and a focus on assessing energy, color healing, the chakras and hand positions used in Reiki. Also includes Reiki attunement, Reiki I sharing and Reiki I certification.

**Prerequisite(s):** WED 120.

*Information: Applicable as an elective course for the Therapeutic Massage program and as continuing education hours for health and wellness professionals.*

*Offered: Fall, Spring.*

WED 122 Reiki II
1 cr. hrs. 1 periods (1 lec.)
Review of the Usui Method of Reiki, Level I and instruction and coaching in the concepts and techniques of Usui Method of Reiki, Level II: color healing, chakra balancing, distance healing and healing symbols in Reiki practice. Includes Reiki II attunement and certification.

**Prerequisite(s):** WED 120, 121.

*Information: WED 121 may be waived with a Reiki I certificate from a qualified Reiki Master. See instructor for details.*

*Information: Applicable as an elective course for the Therapeutic Massage program and as continuing education hours for health and wellness professionals.*

*Offered: May not be offered this year, check class schedule.*

WED 131 Body Mechanics for Health Care Providers
1 cr. hrs. 1 periods (1 lec.)
Understanding and practice of techniques to prevent and correct injuries associated with the physical demands and stresses related to health care in residential, outpatient and home facilities, and massage and body work. Includes posture, body mechanics, and self-care strategies to prevent injuries.

**Recommendation:** Recommended for wellness and continuing education for health care workers and as additional elective study for current therapeutic massage students.

*Offered: May not be offered this year, check class schedule.*

WED 132 Stress Management for Health Care Providers
1 cr. hrs. 1 periods (1 lec.)
Introduces basic stress management techniques to prevent and manage stress. Includes development of awareness of personal stressors, identification of signs and effects of physical and emotional stress, techniques to prevent stress, and coping techniques to relieve physical and mental/emotional stress. Also includes practical application of stress management methods.

**Recommendation:** Recommended for wellness and continuing education for health care workers and as additional elective study for current therapeutic massage students.

*Offered: May not be offered this year, check class schedule.*

**Women’s Studies**

For courses numbered 098, 198, 298, see “Topic Courses” on page 286

WST 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.

*Offered: May not be offered this year, check class schedule.*

WST 201 La Chicana
3 cr. hrs. 3 periods (3 lec.)
Interdisciplinary analysis of Chicanas/Mexicanas status in the United States. Includes interdisciplinary analysis of Chicanas/Mexicanas in the U.S., Chicana/Mexicana interdisciplinary scholarship and Social Justice Movements, and Chicana/Mexicana feminism in the Southwest, Chicana/Mexicana community empowerment, and Chicanas/Mexicanas on the U.S.-Mexico border.

*Information: Same as MAS 201.*

*Offered: May not be offered this year, check class schedule.*
WST 280 Feminist Research Methods
3 cr. hrs. 3 periods (3 lec.)
Introduces research methods applied in contemporary feminist research. Includes introduction to feminist research, research methods, methodologies, and epistemology, feminist construction of knowledge, feminist research as Theory in Action, qualitative research methods/cross-cultural approaches, feminist research issues of power, academic visibility, empowerment, ethics, social justice and agency, and implications of feminist research.
Offered: May not be offered this year, check class schedule.

Writing
For courses numbered 098, 198, 298, see "Topic Courses" on page 286

WRT 070 Developmental Writing
3 cr. hrs. 3 periods (3 lec.)
Development of fundamental writing skills. Includes writing processes and sentence development and structure.
Prerequisite(s): Required score on Writing assessment test.
Information: WRT 070A, 070B, and 070C together constitute WRT 070.
Information: Equivalent to WRT 075.
Offered: Fall, Spring, Summer.

WRT 070A Developmental Writing: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of WRT 070.
Prerequisite(s): Required score on Writing assessment test.
Information: WRT 070A, 070B, and 070C together constitute WRT 070.
Information: A student may concurrently enroll in WRT 070A, 070B, and 070C.
Information: Equivalent to WRT 075A.
Offered: May not be offered this year, check class schedule.

WRT 070B Developmental Writing: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of WRT 070.
Prerequisite(s): WRT 070A with a C or better, or concurrent enrollment.
Information: WRT 070A, 070B, and 070C together constitute WRT 070.
Information: A student may concurrently enroll in WRT 070A, 070B, and 070C.
Information: Equivalent to WRT 075B.
Offered: May not be offered this year, check class schedule.

WRT 070C Developmental Writing: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of WRT 070.
Prerequisite(s): WRT 070B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 070A and 070B.
Information: WRT 070A, 070B, and 070C together constitute WRT 070.
Information: A student may concurrently enroll in WRT 070A, 070B, and 070C.
Information: Equivalent to WRT 075C.
Offered: May not be offered this year, check class schedule.

WRT 072 Sentence Patterns
1 cr. hrs. 1 periods (1 lec.)
Review of various types of sentence structures. Includes variety of sentences, common grammar and sentence errors, punctuation, and short papers.
Offered: May not be offered this year, check class schedule.

WRT 073 Punctuation
1 cr. hrs. 1 periods (1 lec.)
Review of punctuation mechanics. Includes rules of punctuation, punctuation mark usage, and written assignments.
Offered: May not be offered this year, check class schedule.

WRT 075 Developmental Writing for Non-Native Speakers of English
3 cr. hrs. 3 periods (3 lec.)
Development of fundamental writing skills for non-native speakers of English. Includes writing processes, sentence development and structure, and written works.
Prerequisite(s): Required score on the Writing assessment test.
Information: WRT 075A, 075B, and 075C together constitute WRT 075.
Information: Equivalent to WRT 070.
Offered: May not be offered this year, check class schedule.
WRT 075A Developmental Writing for Non-Native Speakers of English: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 075.

Prerequisite(s): Required score on Writing assessment test.

Recommendation: Completion of ESL 085 or 088 before enrolling in this course.

Information: WRT 075A, 075B, and 075C together constitute WRT 075.
Information: A student may concurrently enroll in WRT 075A, 075B, and 075C.
Information: Equivalent to WRT 070A.
Offered: Fall, Spring, Summer.

WRT 075B Developmental Writing for Non-Native Speakers of English: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 075.

Prerequisite(s): WRT 075A with a C or better, or concurrent enrollment.

Information: WRT 075A, 075B, and 075C together constitute WRT 075.
Information: A student may concurrently enroll in WRT 075A, 075B, and 075C.
Information: Equivalent to WRT 070B.
Offered: Fall, Spring, Summer.

WRT 075C Developmental Writing for Non-Native Speakers of English: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 075.

Prerequisite(s): WRT 075B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 070A and 070B.

Information: WRT 075A, 075B, and 075C together constitute WRT 075.
Information: A student may concurrently enroll in WRT 075A, 075B, and 075C.
Information: Equivalent to WRT 070C.
Offered: Fall, Spring, Summer.

WRT 100 Writing Fundamentals
3 cr. hrs. 3 periods (3 lec.)
Review of sentence structure, mechanics and usage. Includes review of sentence patterns, designing and writing effective paragraphs, and developing short essays, one of 500 to 750 words.

Prerequisite(s): WRT 070 or 075 with a C or better, or required score on the Writing assessment test.

Information: WRT 100A, 100B, and 100C together constitute WRT 100.
Information: Equivalent to WRT 106.
Offered: Fall, Spring, Summer.

WRT 100A Writing Fundamentals: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of WRT 100.

Prerequisite(s): WRT 070 or 075 with a C or better, or required score on Writing assessment test.

Information: WRT 100A, 100B, and 100C together constitute WRT 100.
Information: A student may concurrently enroll in WRT 100A, 100B, and 100C.
Information: Equivalent to WRT 106A.
Offered: Fall, Spring, Summer.

WRT 100B Writing Fundamentals: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of WRT 100.

Prerequisite(s): WRT 100A with a C or better, or concurrent enrollment.

Information: WRT 100A, 100B, and 100C together constitute WRT 100.
Information: A student may concurrently enroll in WRT 100A, 100B, and 100C.
Information: Equivalent to WRT 106B.
Offered: Fall, Spring, Summer.

WRT 100C Writing Fundamentals: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of WRT 100.

Prerequisite(s): WRT 100B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 100A and 100B.

Information: WRT 100A, 100B, and 100C together constitute WRT 100.
Information: A student may concurrently enroll in WRT 100A, 100B, and 100C.
Information: Equivalent to WRT 106C.
Offered: Fall, Spring, Summer.
WRT 101 Writing I  SUN# ENG 1101
3 cr. hrs. 3 periods (3 lec.)
Principles and practices of writing. Includes writing college-level essays, review of basic writing skills, written works including a variety of essay types with an emphasis on argumentation, and documented inquiry.

Prerequisite(s): WRT 100 or 106 with a C or better, or required score on writing assessment test.
Information: Equivalent to WRT 107.
Offered: Fall, Spring, Summer.

WRT 101A Writing I: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 101.

Prerequisite(s): WRT 100 or 106 with a C or better, or required score on Writing assessment test.
Information: Equivalent to WRT 107A.
Offered: Fall, Spring, Summer.

WRT 101B Writing I: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 101.

Prerequisite(s): WRT 101A with a C or better, or concurrent enrollment.
Information: Equivalent to WRT 107B.
Offered: Fall, Spring, Summer.

WRT 101C Writing I: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 101.

Prerequisite(s): WRT 101B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 101A and 101B.
Information: Equivalent to WRT 107C.
Offered: Fall, Spring, Summer.

WRT 101HC Writing I: Honors
3 cr. hrs. 3 periods (3 lec.)
Principles and practices of writing. Includes writing college-level essays, review of basic writing skills, written works, and advanced research and critical thinking skills. Also includes narrative DESCRIPTIVE, Expository, and persuasive writing as well as additional Honors level content.

Prerequisite(s): Honors assessment score is required.
Information: Qualification for Honors program and consent of instructor or advisor/counselor is required before enrolling in this course.
Offered: Fall, Spring.

WRT 101P Writing I
3 cr. hrs. 3 periods (3 lec.)
Principles and practices of writing. Includes writing college-level essays, review of basic writing skills, written works including a variety of essay types with an emphasis on argumentation, and documented inquiry.

Prerequisite(s): Placement into WRT 100 on the writing assessment.
Corequisite(s): WRT 194.
Information: Equivalent to WRT101. For students who assess into WRT 100 but believe that with additional studio instruction they can successfully complete WRT 101.
Offered: Fall, Spring.

WRT 102 Writing II  SUN# ENG 1102
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): WRT 101 or 107 with a C or better.
Offered: Fall, Spring, Summer.
WRT 102A Writing II: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 102.

**Prerequisite(s):** WRT 101 or 107 with a C or better.

- Information: WRT 102A, 102B and 102C together constitute WRT 102.
- Information: A student may concurrently enroll in WRT 102A, 102B and 102C.
- Information: Equivalent to WRT 108A.

Offered: Fall, Spring, Summer.

WRT 102B Writing II: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 102.

**Prerequisite(s):** WRT 102A with a C or better, or concurrent enrollment in WRT 102A.

- Information: WRT 102A, 102B and 102C together constitute WRT 102A.
- Information: A student may concurrently enroll in WRT 102A, 102B, and 102C.
- Information: Equivalent to WRT 108B.

Offered: Fall, Spring, Summer.

WRT 102C Writing II: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 102.

**Prerequisite(s):** WRT 102B with a C or better, or concurrent enrollment in WRT 102A and 102B.

- Information: WRT 102A, 102B and 102C together constitute WRT 102.
- Information: A student may concurrently enroll in WRT 102A, 102B and 102C.
- Information: Equivalent to WRT 108C.

Offered: Fall, Spring, Summer.

WRT 102HC Writing II: Honors
3 cr. hrs. 3 periods (3 lec.)
Continuation of WRT 101 or WRT 101HC. Includes writing analytical or critical papers, analysis and discussion of various types of literature, developing advanced research and critical thinking skills, and written works. Also includes writing a research paper as well as additional Honors level content.

**Prerequisite(s):** WRT 101 or WRT 101HC with a C or better.

- Information: Qualification for Honors program and consent of instructor or advisor/counselor is required before enrolling in this course.

Offered: Fall, Spring.

WRT 106 Writing Fundamentals for Non-Native Speakers of English
3 cr. hrs. 3 periods (3 lec.)
Review of sentence structure, mechanics and usage. Includes review of sentence patterns, designing and writing effective paragraphs, and developing short essays, one of 500 to 750 words.

**Prerequisite(s):** WRT 070 or 075 with a C or better, or required score on Writing assessment test.

- Information: Equivalent to WRT 100.

Offered: Fall, Spring.

WRT 106A Writing Fundamentals for Non-Native Speakers of English: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 106.

**Prerequisite(s):** WRT 070 or 075 with a C or better, or required score on Writing assessment test.

- Information: A student may concurrently enroll in WRT 106A, 106B, and 106C.
- Information: Equivalent to WRT 100A.

Offered: Fall, Spring, Summer.

WRT 106B Writing Fundamentals for Non-Native Speakers of English: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 106.

**Prerequisite(s):** WRT 106A with a C or better, or concurrent enrollment.

- Information: A student may concurrently enroll in WRT 106A, 106B, and 106C.
- Information: Equivalent to WRT 100B.

Offered: Fall, Spring, Summer.
WRT 106C Writing Fundamentals for Non-Native Speakers of English: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 106.

Prerequisite(s): WRT 106B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 106A and 106B.
Information: A student may concurrently enroll in WRT 106A, 106B, and 106C.
Information: Equivalent to WRT 100C.
Offered: Fall, Spring, Summer.

WRT 107 Writing I for Non-Native Speakers of English
3 cr. hrs. 3 periods (3 lec.)
Principles and practices of writing appropriate for non-native speakers of English. Includes writing college level essays, review of basic writing skills, and written works including a variety of essay types with an emphasis on argumentation, and documented inquiry.

Prerequisite(s): WRT 100 or 106 with a C or better, or required score on the Writing assessment test.
Information: Equivalent to WRT 101.
Offered: Fall, Spring.

WRT 107A Writing I for Non-Native Speakers of English: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 107.

Prerequisite(s): WRT 100 or 106 with a C or better, or required score on Writing assessment test.
Information: A student may concurrently enroll in WRT 107A, 107B, and 107C.
Information: Equivalent to WRT 101A.
Offered: Fall, Spring, Summer.

WRT 107B Writing I for Non-Native Speakers of English: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 107.

Prerequisite(s): WRT 107A with a C or better, or concurrent enrollment.
Information: A student may concurrently enroll in WRT 107A, 107B, and 107C.
Information: Equivalent to WRT 101B.
Offered: Fall, Spring, Summer.

WRT 107C Writing I for Non-Native Speakers of English: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 107.

Prerequisite(s): WRT 107B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 107A and 107B.
Information: A student may concurrently enroll in WRT 107A, 107B, and 107C.
Information: Equivalent to WRT 101C.
Offered: Fall, Spring, Summer.

WRT 108 Writing II for Non-Native Speakers of English
3 cr. hrs. 3 periods (3 lec.)
Continuation of WRT 107 appropriate for non-native speakers of English. 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): WRT 101 or 107 with a C or better.
Information: Equivalent to WRT 102.
Offered: Fall, Spring.

WRT 108A Writing for Non-Native Speakers of English: Module A
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 108.

Prerequisite(s): WRT 101 or 107 with a C or better.
Information: A student may concurrently enroll in WRT 108A, 108B and 108C.
Information: Equivalent to WRT 102A.
Offered: May not be offered this year, check class schedule.
WRT 108B Writing II for Non-Native Speakers of English: Module B
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 108.
Prerequisite(s): WRT 108A with a C or better, or concurrent enrollment in WRT 108A.
Information: A student may concurrently enroll in WRT 108A, 108B and 108C.
Information: Equivalent to WRT 102B.
Offered: May not be offered this year, check class schedule.

WRT 108C Writing II for Non-Native Speakers of English: Module C
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 108.
Prerequisite(s): WRT 108B with a C or better, or concurrent enrollment in WRT 108A and 108B.
Information: A student may concurrently enroll in WRT 108A, 108B and 108C.
Information: Equivalent to WRT 102C.
Offered: May not be offered this year, check class schedule.

WRT 125 Beginning Poetry Writing
3 cr. hrs. 3 periods (3 lec.)
Poetry for beginners. Includes beginning techniques of 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.
Offered: Fall, Spring, Summer.

WRT 126 Basics of Short Story Writing
3 cr. hrs. 3 periods (3 lec.)
Information: May be taken three times for a maximum of nine credit hours.
Offered: Fall, Spring, Summer.

WRT 140 Writing and Editing Technical Communications
3 cr. hrs. 3 periods (3 lec.)
Introduction to basic concepts and techniques for writing and editing technical documents. Includes sentence structure and style; common grammar, usage, and punctuation rules; paragraph structure; common style-level problems; advanced writing-style concepts; editing in document development, publication, and use; editing technical reports; and writing a technical document.
Prerequisite(s): WRT 101 or 107 with a grade of C or better.
Offered: Fall, Spring, Summer.

WRT 154 Career Communications
3 cr. hrs. 3 periods (3 lec.)
Job related writing skills. Includes writing for audiences and situations, completing job related forms, writing resumes, and using standard written English. May include other written communications as appropriate to occupational areas.
Prerequisite(s): WRT 100 or 106, or 101 or 107 with a C or better or required score on Writing assessment test.
Offered: Fall, Spring.

WRT 154A Career Communication: Job Related Writing Principles & Skills
1 cr. hrs. 1 periods (1 lec.)
Module A constitutes approximately the first one-third of WRT 154.
Prerequisite(s): WRT 100 or 106, or 101 or 107 with a C or better or required score on Writing assessment test.
Information: A student may concurrently enroll in WRT 154A, 154B, and 154C.
Offered: Fall, Spring, Summer.

WRT 154B Career Communications: Basic Job Related Correspondence
1 cr. hrs. 1 periods (1 lec.)
Module B constitutes approximately the second one-third of WRT 154.
Prerequisite(s): WRT 154A with a C or better, or concurrent enrollment.
Information: A student may concurrently enroll in WRT 154A, 154B, and 154C.
Offered: Fall, Spring, Summer.
WRT 154C Career Communications: Basic Job Related Reports
1 cr. hrs. 1 periods (1 lec.)
Module C constitutes approximately the third one-third of WRT 154.
Prerequisite(s): WRT 154B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 154A and 154B.
Information: WRT 154A, 154B, and 154C together constitute WRT 154. A student may concurrently enroll in WRT 154A, 154B, and 154C.
Offered: Fall, Spring, Summer.

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.
Offered: Spring.

WRT 194 Writing Studio
1 cr. hrs. 1.5 periods (.5 lec., 1 lab)
Supplemental writing studio for sections of Writing 101P. Includes writing strategies designed to improve student performance and success in Writing 101P.
Prerequisite(s): Placement into WRT 100 on the writing assessment.
Corequisite(s): WRT 101P.
Information: For students who assess into WRT 100 but believe that with additional studio instruction they can successfully complete WRT 101. This is a required co-requisite for WRT101P. WRT101 is equivalent to WRT101P.
Offered: Fall, Summer and Spring.

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.
Offered: Fall.

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.
Offered: Fall, Spring, Summer.

WRT 206 Short Story Writing
3 cr. hrs. 3 periods (3 lec.)
Short fiction writing. Includes techniques of fiction writing and their effects, critical responses to fiction, and original writing.
Prerequisite(s): WRT 102 or 108 with a C or better.
Offered: Fall, Spring, Summer.

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.
Offered: Fall, Spring.

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.
Offered: Spring.
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.
**Information:** May be taken four times for a maximum of twelve credit hours.
**Offered:** Fall, Spring.

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 grade of 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.
**Offered:** Fall, Spring.

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.
**Offered:** Fall, Spring.

WRT 254 Advanced Professional Communications
3 cr. hrs. 3 periods (3 lec.)
Techniques of writing for scientific, technical and other professional occupations. Includes writing long and short reports, researching and writing about a topic, presentations, and use of appropriate style.
**Prerequisite(s):** WRT 102 or 108 with a C or better.
**Information:** WRT 254A, 254B, and 254C together constitute WRT 254.
**Offered:** Fall, Spring.

WRT 254A Advanced Professional Communications: Module A
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the first one-third of WRT 254.
**Prerequisite(s):** WRT 102 or 108 with a C or better.
**Information:** WRT 254A, 254B, and 254C together constitute WRT 254.
**Information:** A student may concurrently enroll in WRT 254A, 254B, and 254C.
**Offered:** Fall, Spring, Summer.

WRT 254B Advanced Professional Communications: Module B
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the second one-third of WRT 254.
**Prerequisite(s):** WRT 254A with a C or better, or concurrent enrollment.
**Information:** WRT 254A, 254B, and 254C together constitute WRT 254.
**Information:** A student may concurrently enroll in WRT 254A, 254B, and 254C.
**Offered:** Fall, Spring, Summer.

WRT 254C Advanced Professional Communications: Module C
1 cr. hrs. 1 periods (1 lec.)
Constitutes approximately the third one-third of WRT 254.
**Prerequisite(s):** WRT 254B with a C or better, or concurrent enrollment; or concurrent enrollment in WRT 254A and 254B.
**Information:** WRT 254A, 254B, and 254C together constitute WRT 254.
**Information:** A student may concurrently enroll in WRT 254A, 254B, and 254C.
**Offered:** Fall, Spring, Summer.

WRT 281 Beginning Workshop in Tutoring Composition
1 cr. hrs. 3 periods (3 lab)
Introductory workshop in tutoring composition. Includes tutee characteristics and tutoring techniques for development of writing strategies.
**Prerequisite(s):** WRT 101 and 102 with a grade of C or better.
**Offered:** Fall, Spring, Summer.
**WRT 282 Intermediate Workshop in Tutoring Composition**

1 cr. hrs. 3 periods (3 lab)
Continuation of WRT 281. Includes assisting tutees with research methods, assisting tutees with disabilities, and assisting tutees whose first language is not English.

**Prerequisite(s):** WRT 281 with a C or better.
Offered: Fall, Spring, Summer.

**WRT 285 Pima Writers' Workshop**

2 cr. hrs. 2 periods (2 lec.)
Writing of fiction, nonfiction, poetry, and stories for children. Includes techniques of writing, publishing trends and approaches, and criteria for evaluating writing. Also includes the opportunity for participants to have their writing critiqued and presentations by professional authors, editors, and agents.

**Information:** May be taken five times for a maximum of ten credit hours.
Offered: Summer.