

# COURSE DESCRIPTIONS

## Course Numbers

Courses numbered 1-9 are Developmental courses. The credits earned in these courses are not applicable toward associate degree programs.

Courses numbered 10-99 are applicable toward certificate programs but are not applicable toward an associate degree.

Courses numbered 100-199 are freshman courses which may be applicable toward an associate degree or certificate program.

Courses numbered 200-299 are sophomore courses which may be applicable toward an associate degree or certificate program.

## Course Credits

The credit for each course is indicated in parentheses after the title in the course description. One (1) credit is equivalent to one (1) collegiate semester hour credit. Usually, one (1) credit is given for approximately three (3) hours of study weekly as follows:

- One (1) hour of lecture + an average of two (2) hours out-of-class study, or
- Two (2) hours of laboratory or shop study + an average of one (1) hour of out-of-class study, or
- Three (3) hours of laboratory or shop study with no regular out-of-class assignments.

Variable credit (1-5 credits) is assigned to all supervised study, seminar and project, and coordinated internship courses.

## Course Hours

The number of lecture hours in class each week (including lecture, seminar and discussion hours) and/or the number of laboratory hours in class each week (including laboratory, shop, supervised practice, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also called "contact" hours because it is time spent under direct supervision of a faculty member. In addition to the lecture and laboratory hours in class each week, as listed in the course description, each student also must spend some time on out-of-class assignments under his/her own direction.

## Course Prerequisites and Corequisites

If any prerequisites are required before enrolling in a course, these prerequisites will be identified in the course description. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course. **Courses in special sequences (usually identified by the numerals I-II) require that prior courses or their equivalent be completed before enrolling in the advanced courses in the sequence unless otherwise specified.** When corequisites are required for a course, usually the corequisite must be taken at the same time. Students who register for a class without meeting prerequisites may be dropped from the class during the first two weeks of classes.

### Reading and Writing Level Requisites

#### for students enrolled in a program/plan leading toward graduation.

If a course requires a reading level requisite, see below to determine how this requirement may be satisfied.

#### *If a course requires this reading level:*

Reading Level ENG 4

Reading Level ENG 5

Reading Level ENG 111

#### *Meet this reading level by:*

ENG 4R, 4T, or 5T Test Credit or ENG 4 or ENG 5 enrollment

ENG 4T or 5T Test Credit or ENG 4 completion or ENG 5 enrollment

ENG 5T Test Credit or ENG 5 completion

#### *If a course requires this writing level:*

Writing Level ENG 1

Writing Level ENG 3

Writing Level ENG 111

#### *Meet this writing level by:*

ENG 1R, 1T, or 3T Test Credit or ENG 1 or ENG 3 enrollment

ENG 1T or 3T Test Credit or ENG 1 completion or ENG 3 enrollment

ENG 3T Test Credit or ENG 3 completion

ENG DVS test credit based on SAT or ACT test scores satisfies all reading and writing level requisites.

Test credit may be viewed on the Degree Progress Report at MECC Online ([www.mecc.edu](http://www.mecc.edu)).

## GENERAL USAGE COURSES

### **90, 190 & 290 COORDINATED PRACTICE (1-5 CR.)**

Includes supervised practice in selected health agencies coordinated by the College. Credit/Practice ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

### **90, 190, & 290 COORDINATED INTERNSHIP (1-5 CR.)**

Supervises on-the-job training in selected business, industrial, or service firms coordinated by the College. Credit/Practice ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

### **95, 195, & 295 TOPICS (1-5 CR.)**

Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

### **96, 196, & 296 ON-SITE TRAINING (1-5 CR.)**

Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the College. Credit/Work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

### **97, 197 & 297 COOPERATIVE EDUCATION (1-5 CR.)**

Supervises in on-the-job training for pay in approved business, industrial and service firms coordinated by the College's cooperative education office. Is applicable to all occupational-technical curricula at the discretion of the College. Credit/Work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

### **98, 198 & 298 SEMINAR & PROJECT (1-5 CR.)**

Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

## ACCOUNTING (ACC)

### **ACC 105 OFFICE ACCOUNTING (3 CR.)**

Presents practical accounting for secretaries. Covers the accounting cycle—journals, ledgers, working papers, closing of books—payrolls, financial statements, accounting forms and practical procedures. Lecture 3 hours per week.

### **ACC 111-112 ACCOUNTING I-II (3-4 CR.)(3-4 CR.)**

Presents fundamental accounting concepts and principles governing the accounting cycle, journals, ledgers, working papers, and preparation of financial statements for sole proprietorships, partnerships, and corporations. Must be taken in sequence. Lecture 3-4 hours. Total 3-4 hours per week.

### **ACC 124 PAYROLL ACCOUNTING (3 CR.)**

Presents accounting systems and methods used in computing and recording payroll to include payroll taxes and compliance with federal and state legislation. Corequisite: ACC 212. Lecture 3 hours per week.

### **ACC 211-212 PRINCIPLES OF ACCOUNTING I-II (3 CR.)(3 CR.)**

Presents accounting principles and their application to various businesses. Covers the accounting cycle, income determination, asset valuation, and financial reporting. Studies services, merchandising, and includes internal controls. Pre/co-requisite ACC 212 or equivalent. Must be taken in sequence. Lecture 3-4 hours per week.

### **ACC 215 COMPUTERIZED ACCOUNTING (3-4 CR.)**

Introduces the computer in solving accounting problems. Focuses on operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Prerequisite or co-requisite ACC 105, 111, or 211. Lecture 3-4 hours per week.

### **ACC 219 GOVERNMENTAL AND NOT-FOR-PROFIT ACCOUNTING (3 CR.)**

Introduces fund accounting as used by governmental and nonprofit entities. Stresses differences between accounting principles for for-profit and not-for-profit organizations. Prerequisite ACC 212 or equivalent. Lecture 3 hours per week.

### **ACC 221 INTERMEDIATE ACCOUNTING I (3-4 CR.)**

Covers accounting principles and theory, including a review of the accounting cycle and accounting for current assets, current liabilities, and investments. Introduces various accounting approaches and demonstrates the effect of these approaches on the financial statement users. Prerequisite ACC 212 or equivalent. Lecture 3-4 hours per week.

### **ACC 222 INTERMEDIATE ACCOUNTING II (3-4 CR.)**

Continues accounting principles and theory with emphasis on accounting for fixed assets, intangibles, corporate capital structure, long-term liabilities, and investments. Prerequisite ACC 221 or equivalent. Lecture 3-4 hours per week.

### **ACC 231-232 COST ACCOUNTING I-II (3 CR.)(3 CR.)**

Studies cost accounting methods and reporting as applied to job order, process, and standard cost accounting systems. Includes cost control, profit analysis, and other topics. Prerequisite ACC 212 or equivalent. Must be taken in sequence. Lecture 3 hours per week.

### **ACC 261-262 PRINCIPLES OF FEDERAL TAXATION I-II (3 CR.)(3 CR.)**

Presents the study of federal taxation as it relates to individuals and other related entities. Includes tax planning, compliance and reporting. Must be taken in sequence. Lecture 3 hours per week.

### **ACC 298 SEMINAR AND PROJECT (3 CR.)**

Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Corequisite ACC 222. Variable hours.

## ADMINISTRATION OF JUSTICE (ADJ)

### **ADJ 100 SURVEY OF CRIMINAL JUSTICE (3 CR.)**

Presents an overview of the United States criminal justice system; introduces the major system components—law enforcement, judiciary, and corrections. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

### **ADJ 105 THE JUVENILE JUSTICE SYSTEM (3 CR.)**

Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 107 SURVEY OF CRIMINOLOGY (3 CR.)** Surveys the volume and scope of crime; considers a variety of theories developed to explain the causation of crime and criminality. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 111 LAW ENFORCEMENT ORGANIZATION & ADMINISTRATION I (3 CR.)** Teaches the principles of organization and administration of law enforcement agencies. Studies the management of line operations, staff and auxiliary services, investigative and juvenile units. Introduces the concept of data processing; examines policies, procedures, rules, and regulations pertaining to crime prevention. Surveys concepts of protection of life and property, detection of offenses, and apprehension of offenders. Prerequisite for ADJ 112, divisional approval or ADJ 111. Reading Level Requisite ENG 4. May be taken out of sequence. Lecture 3 hours per week.

**ADJ 127 FIREARMS AND MARKSMANSHIP (3 CR.)** Surveys lethal weapons in current usage and current views on weapon types and ammunition design. Examines the legal guidelines as to use of deadly force, safety in handling of weaponry, and weapon care and cleaning; marksmanship instruction under standard range conditions. Prerequisite permission of instructor. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ADJ 130 INTRODUCTION TO CRIMINAL LAW (3 CR.)** Surveys the general principles of American criminal law, the elements of major crimes, and the basic steps of prosecution procedure. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 131 LEGAL EVIDENCE I (3 CR.)** Surveys the identification, degrees, and admissibility of evidence for criminal prosecution; examines pretrial and trial procedures as they pertain to the rules of evidence. Reading Level Requisite ENG 5. Must be completed in sequence. Lecture 3 hours per week.

**ADJ 133 ETHICS AND THE CRIMINAL JUSTICE PROFESSIONAL (3 CR.) (3 CR.)** Examines ethical dilemmas pertaining to the criminal justice system, including those in policing, courts, and corrections. Focuses on some of the specific ethical choices that must be made by the criminal justice professional. Lecture 3 hours per week.

**ADJ 138 DEFENSIVE TACTICS (2 CR.)** Surveys and demonstrates the various types of non-lethal force tools and tactics for use by criminal justice personnel in self-defense, arrest, search, restraint and transport of those in custody. Lecture 2 hours per week.

**ADJ 139 PRIVATE DETECTIVES/INVESTIGATORS (3-5 CR.)** Instructs the student in investigative techniques, criminal law and procedure, rules of evidence, the techniques and mechanics of arrest. Meets state certification requirements for private investigators licensing. Lecture 3-5 hours per week.

**ADJ 140 INTRODUCTION TO CORRECTIONS (3 CR.)** Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**ADJ 146 ADULT CORRECTIONAL INSTITUTIONS (3 CR.)** Describes the structures, functions, and goals of state and federal correctional institutions (prisons, farms, community-based units, etc.) for adult inmates. Lecture 3 hours per week.

**ADJ 168 COMPUTER APPLICATIONS IN ADMINISTRATION OF JUSTICE (3 CR.)** Provides instruction in the techniques and practices used to identify the automation needs of criminal justice agencies; covers the use of computer applications in the processing of operational and administrative records and standardized reports; discusses the use of rational data base applications to develop specialized reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ADJ 171-172 FORENSIC SCIENCE I-II (4 CR.) (4 CR.)** Introduces students to crime scene technology, procedures for sketching, diagramming and using casting materials. Surveys the concepts of forensic chemistry, fingerprint classification/identification and latent techniques, drug identification, hair and fiber evidence, death investigation techniques, thin-layer chromatographic methods, and arson materials examination. Reading Level Requisite ENG 5. Writing level requisite ENG 3. May be completed out of sequence. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ADJ 198 SEMINAR AND PROJECT (3 CR.)** This course is an independent study for criminal justice students who do not take ADJ 296—On-site training in Criminal Justice. The student will complete a major research project in any area relative to the criminal justice field. Writing level requisite ENG 3. Variable hours per week.

**ADJ 227 CONSTITUTIONAL LAW FOR JUSTICE PERSONNEL (3 CR.)** Surveys the basic guarantees of liberty described in the U. S. Constitution and the historical development of these restrictions on government power, primarily through U. S. Supreme Court decisions. Reviews rights of free speech, press, assembly, as well as criminal procedure guarantees (to counsel, jury trial, habeas corpus, etc.) as they apply to the activities of those in the criminal justice system. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 236 PRINCIPLES OF CRIMINAL INVESTIGATION (3 CR.)** Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling, and preserving of evidence. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 241 CORRECTIONAL LAW I (3 CR.)** Studies the legal rights & obligations of the convict-probationer, inmate, and parolee. Surveys methods of enforcing both rights & obligations & the responsibilities of corrections agencies & personnel under correctional law (constitutional, statutory, and regulatory provisions). Reading Level Requisite ENG 5. Lecture 3 hours per week.

**ADJ 246 CORRECTIONAL COUNSELING (3 CR.)** Presents concepts and principles of interviewing and counseling as applied in the correctional setting. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 248 PROBATION, PAROLE, AND TREATMENT (3 CR.)** Surveys the philosophy, history, organization, personnel and functioning of traditional and innovative probation and parole programs; considers major treatment models for clients. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 275 FORENSIC PATHOLOGY (3 CR.)** Introduces the pathology and physiology of the human body with emphasis on scientific name and technique used in medicolegal investigations of death. Studies types of death, the mechanisms of death and death reflex, and the determining of the cause of death by postmortem examination. Writing level requisite ENG 3. Lecture 3 hours per week.

**ADJ 296 ON-SITE TRAINING IN CRIMINAL JUSTICE (3 CR.)** In order to apply criminal justice theory to practice, this course will allow the student to participate in an on-site criminal justice learning experience in a variety of criminal justice agencies. Appropriate placements will be with police departments, sheriff's departments, juvenile and adult probation departments, correctional institutions, and departments of social services. Other placements will be evaluated on a case by case basis. Variable hours per week.

**ADMINISTRATIVE SUPPORT TECHNOLOGY (AST)**

**AST 100 OFFICE SKILLS REVIEW (3 CR.)** Reviews office skills such as keyboarding typewriting, shorthand, machine transcription and other selected office topics based on individual needs. Lecture 3-4 hours per week.

**AST 101 KEYBOARDING I (3 CR.)** Teaches the alpha/numeric keyboard with emphasis on correct techniques, speed, and accuracy. Teaches formatting of basic personal and business correspondence, reports, and tabulation. Lecture 3 hours per week.

**AST 107 EDITING/PROOFREADING SKILLS (3 CR.)** Develops skills essential to creating and editing business documents. Covers spelling, grammar, diction and punctuation, capitalization, and other usage problems. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 108 TELEPHONE TECHNIQUES (1 CR.)** Provides guidelines and techniques for communicating effectively on the telephone and for handling telephone problems efficiently, pleasantly, and constructively. Lecture 1 hour per week.

**AST 112 KEYBOARDING SKILL (3 CR.)** Emphasizes speed and accuracy to attain skills for job employment and job promotion. Prerequisite: AST 101 or AST 114 or equivalent. Lecture 3 hours per week.

**AST 114 KEYBOARDING FOR INFORMATION PROCESSING (1-2 CR.)** Teaches the alphabetic and numeric keys; develops correct techniques and competency in the use of computer keyboards. May include basic correspondence and report formats. A laboratory co-requisite (AST 115) may be required. Lecture 1-2 hours per week.

**AST 117 KEYBOARDING FOR COMPUTER USAGE (1 CR.)** Teaches the alphabetic keyboard and 10-key pad. Develops correct keying techniques. Lecture 1 hour per week.

**AST 132 WORD PROCESSING I (SPECIFY SOFTWARE) (1 CR.)** Introduces students to a word processing program to create, edit, save and print documents. Lecture 1 hour per week.

**AST 133 WORD PROCESSING II (SPECIFY SOFTWARE) (1 CR.)** Presents formatting and editing features of a word processing program. Lecture 1 hour per week.

**AST 137 RECORDS MANAGEMENT (3 CR.)** Teaches filing procedures for hard copy, electronic, and micrographic systems. Identifies equipment, supplies, and solutions to records management problems. Writing level requisite ENG 111. Lecture 3 hours per week.

**AST 141 WORD PROCESSING I (WPFOR WINDOWS) (3 CR.)** Teaches creating and editing documents, including line and page layouts, columns, fonts, search/replace, cut/paste, spell/thesaurus, and advanced editing and formatting features of word processing software. Prerequisite AST 101 or equivalent. A laboratory co-requisite (AST 144) may be required. Lecture 3 hours per week.

**AST 147 INTRODUCTION TO PRESENTATION SOFTWARE (SPECIFY SOFTWARE) (1-2 CR.)** Introduces presentation options including slides, transparencies, and other forms of presentations. Lecture 1-2 hours per week.

**AST 150 DESKTOP PUBLISHING I (SPECIFY SOFTWARE) (1 CR.)** Presents desktop publishing features including page layout and design, font selection, and use of graphic images. Lecture 1 hour per week.

**AST 151 DESKTOP PUBLISHING II (SPECIFY SOFTWARE) (1 CR.)** Presents software features for refining page layout and design, includes scaling and cropping graphics, and creating styles. Lecture 1 hour per week.

**AST 171 INTRODUCTION TO CALL CENTER SERVICES (3 CR.)** Introduces concepts and skills needed to be an effective customer service representative for a telephone service operation. Covers call center theory and technology, interpersonal communication skills, customer relations attitudes, telecommunications techniques, and professional procedures to handle a variety of customer service sales requests. Lecture 3 hours per week.

**AST 205 BUSINESS COMMUNICATIONS (3 CR.)** Teaches techniques of oral and written communications. Emphasizes writing and presenting business-related materials. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 206 PROFESSIONAL DEVELOPMENT (3 CR.)** Develops professional awareness in handling business and social situations. Emphasis on goal setting and decision making. Writing level requisite ENG 111. Lecture 3 hours per week.

**AST 236 SPECIALIZED SOFTWARE APPLICATIONS (3 CR.)** Teaches specialized integrated software applications on the microcomputer. Emphasizes document production to meet business and industry standards. Prerequisite AST 101 or equivalent. A laboratory co-requisite (AST 237) may be required. Lecture 3 hours per week.

**AST 238 WORD PROCESSING ADVANCED OPERATIONS (3 CR.)** Teaches advanced word processing features including working with merge files, macros, and graphics; develops competence in the production of complex documents. A laboratory co-requisite (AST 239) may be required. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 240 MACHINE TRANSCRIPTION (3 CR.)** Develops proficiency in the use of transcribing equipment to produce business documents. Emphasizes listening techniques, business English, and proper formatting. Includes production rate and mailable copy requirements. A laboratory co-requisite (AST 241) may be required. Co-requisite AST 112 or equivalent. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 243 OFFICE ADMINISTRATION I (3 CR.)** Develops an understanding of the administrative support role and the skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes the development of critical thinking, problem-solving, and job performance skills in a business office environment. Prerequisite AST 101. Writing level requisite ENG 111. Lecture 3 hours per week.

**AST 244 OFFICE ADMINISTRATION II (3 CR.)** Enhances skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes administrative and supervisory role of the office professional. Includes travel and meeting planning, office budgeting and financial procedures, international issues, and career development. Prerequisite AST 243 or equivalent. Writing level requisite ENG 111. Lecture 3 hours per week.

**AST 245 MEDICAL MACHINE TRANSCRIPTION (3 CR.)** Develops machine transcription skills, integrating operation of transcribing equipment with understanding of medical terminology. Emphasizes dictation techniques and accurate transcription of medical documents in prescribed formats. Prerequisite AST 112 or equivalent. A laboratory co-requisite (AST 246) may be required. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 253 ADVANCED DESKTOP PUBLISHING I (SPECIFY SOFTWARE) (2-4 CR.)** Introduces specific desktop publishing software. Teaches document layout and design, fonts, type styles, style sheets, and graphics. Prerequisite AST 101 or equivalent and experience in using a word processing package. A laboratory co-requisite (AST 255) may be required. Writing level requisite ENG 3. Lecture 2-4 hours per week.

**AST 257 WP DESKTOP PUBLISHING (3 CR.)** Uses word processing software to teach advanced document preparation. Prerequisite AST 101 or equivalent and experience in using the specified word processing software. A laboratory co-requisite (AST 258) may be required. Lecture 3 hours per week.

**AST 260 PRESENTATION SOFTWARE (3 CR.)** Teaches creation of slides including use of text, clip art, and graphs. Includes techniques for enhancing presentations with on-screen slide show as well as printing to transparencies and handouts. Incorporates use of sound and video clips. A laboratory co-requisite (AST 261) may be required. Writing level requisite ENG 3. Lecture 3 hours per week.

**AST 271 MEDICAL OFFICE PROCEDURES I (3 CR.)** Covers medical office procedures, records management, preparation of medical reports, and other medical documents. Co-requisite AST 112 or equivalent. Writing level requisite ENG 111. Lecture 3 hours per week.

**AST 290 INTERNSHIP IN ADMINISTRATIVE SUPPORT TECHNOLOGY (1-5 CR.)** Supervises on-the-job training in selected business, industrial, or service firms coordinated by the college. Credit/practice ratio maximum 1-5. Writing level requisite ENG 3. Variable hours.

**AST 298 SEMINAR AND PROJECT IN ADMINISTRATIVE SUPPORT TECHNOLOGY (1-5 CR.)** Completion of an office simulation package, a research report related to the manner the students' objectives were accomplished and an employment portfolio. Writing level requisite ENG 3. Variable hours.

## AGRICULTURE (AGR)

**AGR 205 SOIL FERTILITY AND MANAGEMENT (3 CR.)** Studies the factors influencing soil productivity with emphasis upon fertilizer materials from production to application. Discusses time, sources, and soil acidity. Presents soil testing techniques, interpretation of soil tests, and the addition of nutrients to correct or prevent deficiencies. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AGR 208 INSECT CONTROL (3 CR.)** Examines principles and current trends in insect control. Studies biology and identification of economically important insects and related pests. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 2-3 hours. Laboratory 2 hours. Total 4-5 hours per week.

## AIR CONDITIONING & REFRIGERATION (AIR)

**AIR 111-112 AIR CONDITIONING AND REFRIGERATION CONTROLS I-II (3 CR.)(3 CR.)** Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. May be completed out of sequence. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AIR 116 DUCT CONSTRUCTION AND MAINTENANCE (2 CR.)** Presents duct materials including sheet metal, aluminum, and fiber glass. Explains development of duct systems, layout methods, safety hand tools, cutting and shaping machines, fasteners and fabrication practices. Includes duct fittings, dampers and regulators, diffusers, heater and air washers, fans, insulation, and ventilating hoods. Lecture 1 hours. Laboratory 2 hours. Total 3 hours per week.

**AIR 121 AIR CONDITIONING & REFRIGERATION I-II (4 CR.)** Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AIR 154 HEATING SYSTEMS I (3 CR.)** Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Lecture 2 hour. Laboratory 2 hours. Total 4 hours per week.

**AIR 235 HEAT PUMPS (3 CR.)** Studies theory and operation of reverse cycle refrigeration systems as applied to air conditioning, including service, installation and maintenance. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AIR 298 SEMINAR AND PROJECT (3 CR.)** Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours per week.

## **ARCHITECTURE (ARC)**

**ARC 121 ARCHITECTURAL DRAFTING I (3 CR.)** Introduces techniques of architectural drafting, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ARC 122 ARCHITECTURAL DRAFTING II (3 CR.)** A continuation of Architectural Drafting I. Requires development of a limited set of working drawings, including a site plan and related details, and pictorial drawings. Prerequisite ARC 121 or equivalent. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

## **ARTS (ART)**

**ART 100 ART APPRECIATION (3 CR.)** Introduces art from prehistoric times to the present day. Describes architectural styles, sculpture, photography, printmaking, and painting techniques. Reading Level Requisite ENG 111. Lecture 3 hours per week.

**ART 101-102 HISTORY AND APPRECIATION OF ART I-II (3 CR.) (3 CR.)** Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to the present. Reading Level Requisite ENG 111. Writing level requisite ENG 3. May be taken out of sequence. Lecture 3 hours per week.

**ART 121-122 DRAWING I-II (3-4 CR.) (3-4 CR.)** Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone and composition as applied to still life, landscape and the figure. Uses drawing media such as pencil, charcoal, ink wash and color media. Includes field trips and gallery assignments as appropriate. Reading Level Requisite ENG 4 or 5. Variable hours per week. Prerequisite for ART 122 is ART 121.

**ART 125 INTRODUCTION TO PAINTING (3 CR.)** Introduces study of color, composition and painting techniques. Places emphasis on experimentation and enjoyment of oil and/or acrylic paints and the fundamentals of tools and materials. Reading Level Requisite ENG 4 or 5. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 131-132 FUNDAMENTALS OF DESIGN I-II (3-4 CR.) (3-4 CR.)** Explores the concepts of two- and three-dimensional design and color. May include field trips. Reading Level Requisite ENG 5. Variable hours per week. May be taken out of sequence.

**ART 180 INTRODUCTION TO COMPUTER GRAPHICS (3 CR.)** Provides a working introduction to computer-based electronic technology used by visual artists and designers. Presents the basics of operating platforms and standard industry software. Introduces problems in which students can explore creative potential of the new electronic media environment. Reading Level Requisite ENG 111. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ART 221-222 DRAWING III-IV (3-4 CR.) (3-4 CR.)** Introduces advanced concepts and techniques of drawing as applied to the figure, still life and landscape. Gives additional instruction in composition, modeling, space and perspective. Encourages individual approaches to drawing. Reading Level Requisite ENG 111. Variable hours per week. Prerequisite for ART 222 is ART 221.

**ART 241-242 PAINTING I-II (3-4 CR.) (3-4 CR.)** Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Prerequisites ART 122 or divisional approval. Reading Level Requisite ENG 111. Variable hours per week. Prerequisite for ART 242 is ART 241.

**ART 275 RELIEF PRINTMAKING (4 CR.)** Introduces relief printmaking techniques including woodcut, linocut, and collagraph. Includes field trips when applicable. Reading Level Requisite ENG 111. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

**ART 283-284 COMPUTER GRAPHICS I-II (4 CR.) (4 CR.)** Introduces microcomputers and software used to produce computer graphics. Employs techniques learned to solve studio projects which reinforce instruction and are appropriate for portfolio use. Reading Level Requisite ENG 5. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week. May be taken out of sequence. Prerequisite for ART 283 is ART 180.

## **AMERICAN SIGN LANGUAGE (ASL)**

**ASL 101 AMERICAN SIGN LANGUAGE I (3-4 CR.)** Introduces the fundamentals of American Sign Language (ASL) used by the Deaf Community, including basic vocabulary, syntax, fingerspelling, and grammatical non-manual signals. Focuses on communicative competence. Develops gestural skills as a foundation for ASL enhancement. Introduces cultural knowledge and increases understanding of the Deaf Community. Reading Level Requisite ENG 4. Lecture 3-4 hours. Laboratory hours 0-2 hours. Total 3-5 hours per week.

**ASL 102 AMERICAN SIGN LANGUAGE II (3-4 CR.)** Introduces the fundamentals of American Sign Language (ASL) used by the Deaf Community, including basic vocabulary, syntax, fingerspelling, and grammatical non-manual signals. Focuses on communicative competence. Develops gestural skills as a foundation for ASL enhancement. Introduces cultural knowledge and increases understanding of the Deaf Community. Reading Level Requisite ENG 4. Lecture 3-4 hours. Laboratory hours 0-2 hours. Total 3-5 hours per week.

**ASL 115 FINGERSPELLING AND NUMBER USE IN ASL (2 CR.)** Provides intensive practice in comprehension and production of fingerspelled words and numbers with emphasis on clarity and accuracy. Focuses on lexicalized fingerspelling and numeral incorporation as used by native users of American Sign Language. Reading Level Requisite ENG 4. Prerequisite: ASL 101 or permission of instructor. Lecture 2 hours per week.

**ASL 125 HISTORY AND CULTURE OF THE DEAF COMMUNITY (3 CR.)** Presents an overview of various aspects of Deaf Culture, including educational and legal issues. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**ASL 150 WORKING WITH DEAF AND HARD-OF-HEARING PEOPLE (2 CR.)** Explores career options for serving Deaf/hard-of-hearing people and/or for using American Sign Language skills in a career. Examines interests, skills, and educational assessments. Investigates job market viability via the Internet and professional periodicals. Develops opportunities for students to network with professionals in the field of deafness. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**ASL 201 AMERICAN SIGN LANGUAGE III (3-4 CR.)** Develops vocabulary, conversational competence, and grammatical knowledge with a total immersion approach. Introduces increasingly complex grammatical aspects including those unique to ASL. Discusses culture and literature. Contact with the Deaf Community is encouraged to enhance linguistic and cultural knowledge. Reading Level Requisite ENG 4. Lecture 3-4 hours. Laboratory hours 0-2 hours. Total 3-5 hours per week.

## **BIOLOGY (BIO)**

**BIO 101-102 GENERAL BIOLOGY I-II (4 CR.)(4 CR.)** Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function and evolution. Reading Level Requisite ENG 111. Writing level requisite ENG 3. May be taken out of sequence. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 141-142 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 CR.) (4 CR.)** Integrates anatomy and physiology of cells, tissues, organs, and systems of the human body. Integrates concepts of chemistry, physics, and pathology. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Must be taken in sequence. Lecture 3 hours. Laboratory 2-3 hours per week. Total 5-6 hours per week.

**BIO 205 GENERAL MICROBIOLOGY (4 CR.)** Examines morphology, genetics, physiology, ecology, and control of microorganisms. Emphasizes application of microbiological techniques to selected fields. Prerequisites one year of college biology and one year of college chemistry or divisional approval. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Must be taken in sequence. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 231-232 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 CR.)(4 CR.)** Integrates the study of gross and microscopic anatomy with physiology, emphasizing the analysis and interpretation of physiological data. Prerequisites one year of college biology and one year of college chemistry or divisional approval. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Must be taken in sequence. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

## **BUSINESS ADMINISTRATION & MANAGEMENT (BUS)**

**BUS 100 INTRODUCTION TO BUSINESS (3 CR.)** Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, finance, marketing, production, and risk and human resource management. Lecture 3 hours per week.

**BUS 111 PRINCIPLES OF SUPERVISION I (3-4 CR.)** Teaches the fundamentals of supervision, including the primary responsibilities of the supervisor. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training and orientation, performance evaluation, and effective employee/supervisor relationships. Writing level requisite ENG 3. Lecture 3-4 hours per week.

**BUS 116 ENTREPRENEURSHIP (3 CR.)** Presents the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance start-up, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques. Lecture 3 hours per week.

**BUS 121 BUSINESS MATHEMATICS I (3 CR.)** Applies mathematics to business processes and problems such as checkbook records and bank reconciliation, simple interest notes, present value, bank discount notes, wage and payroll computation, depreciation, sales and property taxes, commercial discounts, markup and markdown, and inventory turnovers and valuation. Lecture 3 hours per week.

**BUS 135 ADMINISTRATIVE OFFICE MANAGEMENT (3 CR.)** Introduces office organization and procedures through the study of layout, work flow, standards, equipment, and centralized services. Exposes the student to the elements of office personnel administration and supervision. Discusses current office management trends. Lecture 3 hours per week.

**BUS 165 SMALL BUSINESS MANAGEMENT (3 CR.)** Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

**BUS 200 PRINCIPLES OF MANAGEMENT (3 CR.)** Teaches management and the management functions of planning, organizing, directing and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Writing level requisite ENG 3. Lecture 3 hours per week.

**BUS 202 APPLIED MANAGEMENT PRINCIPLES (3 CR.)** Focuses on management practices and issues. May use case studies and/or management decision models to analyze and develop solutions to management problems. Writing level requisite ENG 3. Lecture 3 hours per week.

**BUS 205 HUMAN RESOURCE MANAGEMENT (3 CR.)** Introduces employment, selection, and placement of personnel, usage levels and methods, job descriptions, training methods and programs, and employee evaluation systems, compensation and labor relations. Includes procedures for management of human resources and uses case studies and problems to demonstrate implementation of these techniques. Writing level requisite ENG 3. Lecture 3 hours per week.

**BUS 235 BUSINESS LETTER WRITING (3 CR.)** Applies composition principles to business correspondence, employment documents, and reports (including presentation of data in various chart formats). Focuses on preparing effective communications with customers, suppliers, employees, the public, and other business contacts. Lecture 3 hours per week.

**BUS 241 BUSINESS LAW I (3 CR.)** Presents a broad introduction to legal environment of U.S. business. Develops a basic understanding of contract law and agency and government regulation. Writing level requisite ENG 3. Lecture 3 hours per week.

**BUS 242 BUSINESS LAW II (3 CR.)** Develops a basic understanding of the uniform commercial code relating to business organization, bankruptcy, and personal and real property. Prerequisite BUS 241 or divisional approval. Writing level requisite ENG 3. Lecture 3 hours per week.

**BUS 285 CURRENT ISSUES IN MANAGEMENT (3 CR.)** Designed as a capstone course for Management Majors, the course is designed to provide an integrated perspective of the current issues and trends in business management. Contemporary issues will be explored in a highly participatory class environment. Lecture 3 hours per week.

## CHEMISTRY (CHM)

**CHM 5 DEVELOPMENTAL CHEMISTRY FOR ALLIED HEALTH SCIENCES (4 CR.)** Introduces basic principles of inorganic, organic, and biological chemistry. Emphasizes applications to the health sciences. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week. Laboratory 3 hours per week.

**CHM 101-102 GENERAL CHEMISTRY I-II (4 CR.) (4 CR.)** Emphasizes experimental and theoretical aspects of inorganic, organic, and biological chemistry. Discusses general chemistry concepts as they apply to issues within our society and environment. Designed for the non-science major. Must be completed in sequence. Reading Level Requisite ENG 111. Writing level requisite ENG 111. See page 73.

**CHM 111-112 COLLEGE CHEMISTRY I-II (4 CR.) (4 CR.)** Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week. Prerequisite for CHM 112 is CHM 111.

**CHM 241-242 ORGANIC CHEMISTRY I-II (3 CR.) (3 CR.)** Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Co-requisite is CHM 243-244 or CHM 245-246. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week. Prerequisite is CHM 112.

**CHM 245-246 SPECIAL ORGANIC CHEMISTRY LABORATORY I-II (2 CR.) (2 CR.)** Is taken concurrently with CHM 241 and CHM 242 by chemistry and chemical engineering majors. Includes qualitative organic analysis. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Laboratory 6 hours per week.

## CHILD DEVELOPMENT (CHD)

**CHD 118 METHODS AND MATERIALS IN THE LANGUAGE ARTS FOR CHILDREN (3 CR.)** Presents techniques and methods for encouraging the development of language and perceptual skills in young children. Stresses improvement of vocabulary, speech and methods to stimulate discussion. Surveys children's literature, examines elements of quality story telling and story reading, and stresses the use of audiovisual materials. Reading Level Requisite ENG 5. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CHD 120 INTRODUCTION TO EARLY CHILDHOOD EDUCATION (3 CR.)** Introduces early childhood development through activities and experiences in nursery, pre-kindergarten, kindergarten, and primary programs. Investigates classroom organization and procedures, and use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**CHD 125 CREATIVE ACTIVITIES FOR CHILDREN (3 CR.)** Prepares individuals to work with young children in the arts and other creative age-appropriate activities. Investigates affective classroom experiences and open-ended activities. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CHD 126 SCIENCE & MATH CONCEPTS FOR CHILDREN (3 CR.)** Covers the selection of appropriate developmental learning materials for developing activities to stimulate the logical thinking skills in children. Reading Level Requisite ENG 5. Lecture 2-3 hours. Laboratory 0-3 hours. Total 3-4 hours per week.

**CHD 165 OBSER. AND PARTI. IN EARLY CH/PRIMARY SETTINGS (3 CR)** Observes and participates in early childhood settings such as child care centers, pre-schools, Montessori schools or public schools in Kindergarten through 3rd grade levels. Students spend one hour each week in a seminar session in addition to 60 clock hours in the field. May be taken again for credit. Reading Level Requisite ENG 5. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**CHD 166 INFANT AND TODDLER PROGRAMS (3 CR.)** Examines the fundamentals of infant and toddler development, including planning and implementing programs in group care. Emphasizes meeting physical, social, emotional, and cognitive needs: scheduling, preparing age-appropriate activities, health and safety policies, record keeping, and reporting to parents. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**CHD205 GUIDING THE BEHAVIOR OF CHILDREN (3 CR.)** Explores positive ways to build self-esteem in children and help them develop self-control. Presents practical ideas for encouraging pro-social behavior in children and emphasizes basic skills and techniques in classroom management. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**CHD 215 MODELS OF EARLY CHILDHOOD EDUCATION PROGRAMS (3 CR.)** Studies and discusses the various models and theories of early childhood education programs including current trends and issues. Presents state licensing and staff requirements. Reading Level Requisite ENG 5. Lecture 3 hours per week.

### **CIVIL ENGINEERING TECHNOLOGY (CIV)**

**CIV 116 TOPOGRAPHIC DRAFTING (3 CR.)** Focuses on the development of techniques for topographic data computation, topographic map preparation and interpretation. Includes preparation of maps from survey field data, terrestrial and aerial photography, and techniques for the use of color in topographic presentations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 171 SURVEYING I (3 CR.)** Introduces surveying equipment, procedures, and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computation and introduction to topography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 172 SURVEYING II (3 CR.)** Introduces surveys for transportation systems including the preparation and analysis of topographic maps, horizontal and vertical curves, earthwork and other topics related to transportation construction. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 240 FLUID MECHANICS AND HYDRAULICS (3 CR.)** Introduces the principles of fluid flow and development of practical hydraulics resulting from study of fluid statics, flow of real fluid in pipes, multiple pipe lines, liquid flow in open channels, and fluid measurement techniques. Prerequisite: Statics or divisional approval. Lecture 3 hours per week.

**CIV 246 WATER RESOURCES TECHNOLOGY (3 CR.)** This course introduces the elements of hydrology and hydraulic systems. Reading Level Requisite ENG 5. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

### **DRAFTING (DRF)**

**DRF 127 INTRODUCTION TO GEOMETRIC DIMENSIONING & TOLERANCING (1 CR.)** Presents an overview of a positional tolerance system, its relationship to coordinate tolerance systems, and other aspects of industry standard drafting practices. Reading Level Requisite ENG 4. Lecture 1 hour per week.

**DRF 135 ELECTRICAL/ELECTRONICS BLUEPRINT READING (2 CR.)** Presents an interpretation of basic shop drawings, conventional symbols, terminology, and principles used by the mechanical draftsman. Explains common electrical and electronic symbols, wiring diagrams, schematic drawings, and application of wiring diagrams. Lecture 2 hours per week.

**DRF 151-152 ENGINEERING DRAWING FUNDAMENTALS I-II (3 CR.)(3 CR.)** Introduces technical drafting from the fundamentals through advanced drafting practices. Includes lettering, geometric construction, technical sketching, orthographic projection, sections, intersections, development, fasteners. Teaches theory and application of dimensioning and tolerances, pictorial drawing, and preparation of drawings. Reading Level Requisite ENG 4. Must be taken in sequence. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

**DRF 160 MACHINE BLUEPRINT READING (3 CR.)** Introduces interpreting of various blueprints and working drawings. Applies basic principles and techniques such as visualization of an object, orthographic projection, technical sketching and drafting terminology. Requires outside preparation. Lecture 3 hours per week.

**DRF 165 ARCHITECTURAL BLUEPRINT READING (3 CR.)** Emphasizes reading, understanding and interpreting standard types of architectural drawings including plans, elevation, sections and details. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**DRF 166 WELDING BLUEPRINT READING (2 CR.)** Teaches welding procedures and applications. Stresses structural steel, design, layout. Explains industrial symbols. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 167 ADVANCED BLUEPRINT READING (2 CR.)** Focuses on the use of industrial prints; production drawing, operation sheets and tool drawings; dimensioning and tolerances; assembly detail drawings. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 169 BLUEPRINT READING FOR HEAVY CONSTRUCTION (2 CR.)** Presents material for draftsmen, material estimators, construction workers, superintendents, and others involved in heavy construction. Includes site layout, foundations, reinforced concrete and steel construction, interior finishing and mechanical/electrical systems. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**DRF 175 SCHEMATICS AND MECHANICAL DIAGRAMS (2 CR.)** Covers interpretation of basic shop drawings, conventional symbols, common electrical and electronics symbols, wiring diagrams, hydraulic and pneumatic symbols, schematic drawings, and piping diagrams. Lecture 2 hours per week.

**DRF 200 SURVEY OF COMPUTER AIDED DRAFTING (3-4 CR.)** Surveys computer-aided drafting equipment and concepts. Develops general understanding of components, operations and use of a typical CADD system. Variable hours per week.

**DRF 201 COMPUTER AIDED DRAFTING & DESIGN I (3 CR.)** Teaches computer-aided drafting concepts and equipment designed to develop a general understanding of components of a typical CAD system and its operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**DRF 231 COMPUTERAIDED DRAFTING I (2-3 CR.)** Teaches computer aided drafting concepts and equipment designed to develop a general understanding of components and operate a typical CAD system. Prerequisite DRF 111 or DRF 160 or divisional approval. Lecture 1-2 hours. Laboratory 2-3 hours. Total 3-5 hours per week.

**DRF 232 COMPUTERAIDED DRAFTING II (2-3 CR.)** Teaches advanced operation in computer-aided drafting. Prerequisite DRF 231. Lecture 1-2 hours. Laboratory 2-3 hours. Total 3-5 hours per week.

**DRF 233 COMPUTERAIDED DRAFTING III (2 CR.)** Exposes a student to 3-D and modeling. Focuses on proficiency in Production drawing using a CAD system. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 290 COORDINATED INTERNSHIP (4 CR.)** In order to apply drafting design and technology theory to practice, this cooperative venture will allow students to participate in on-site training in actual industrial setting. Appropriate placement will be with local industries which have drafting and design departments. Variable hours per week.

**DRF 298 SEMINAR AND PROJECT IN DRAFTING (4 CR.)** Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

## ECONOMICS (ECO)

**ECO 110 CONSUMER ECONOMICS (3 CR.)** Fosters understanding of American economic system and the individual's role as a consumer. Emphasizes application of economic principles to practical problems encountered. Alerts students to opportunities, dangers, and alternatives of consumers. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ECO 120 SURVEY OF ECONOMICS (3 CR.)** Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**ECO 201 PRINCIPLES OF ECONOMICS I - MACROECONOMICS (3 CR.)** Introduces macroeconomics including the study of Keynesian, classical, monetarist principles and theories, the study of national economic growth, inflation, recession, unemployment, financial markets, money and banking, the role of government spending and taxation, along with international trade and investments. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**ECO 202 PRINCIPLES OF ECONOMICS II - MICROECONOMICS (3 CR.)** Introduces the basic concepts of microeconomics. Explores the free market concepts with coverage of economic models and graphs, scarcity and choices, supply and demand, elasticities, marginal benefits and costs, profits, and production and distribution. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

## EDUCATION (EDU)

**EDU 200 INTRODUCTION TO TEACHING AS A PROFESSION (3 CR.)** Provides an orientation to the teaching profession in Virginia, including historical perspectives, current issues, and future trends in education on the national and state levels. Emphasizes information about teacher licensure examinations, steps to certification, teacher preparation and induction programs, and attention to critical shortage areas in Virginia. Includes supervised field placement (recommended: 40 clock hours) in a K-12 school. Prerequisite: successful completion of 24 credits of transfer courses. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## ELECTRICAL TECHNOLOGY (ELE)

**ELE 110 HOME ELECTRIC POWER (3 CR.)** Covers the fundamentals of residential power distribution, circuits, panels, fuse boxes, breakers, transformers. Includes study of the National Electrical Code, purpose, and interpretation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 131-132 NATIONAL ELECTRICAL CODE I-II (3-4 CR.) (3-4 CR.)** Provides comprehensive study of the purpose and interpretations of the National Electrical Code as well as familiarization and implementation of various charts, code rulings and wiring methods including state and local regulations. Must be taken in sequence. Lecture 2-3 hours. Laboratory 0-3 hours. Total 3-6 hours per week.

**ELE 133-134 PRACTICAL ELECTRICITY I-II (3 CR.) (3 CR.)** Teaches the fundamentals of electricity, terminology, symbols, and diagrams. Includes the principles essential to the understanding of general practices, safety and the practical aspects of residential and nonresidential wiring and electrical installation. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 135 NATIONAL ELECTRICAL CODE - RESIDENTIAL (4 CR.)** Studies purposes and interpretations of the National Electrical Code that deals with single and multifamily dwellings, including state and local regulations. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

**ELE 136 NATIONAL ELECTRICAL CODE - COMMERCIAL (3 CR.)** Provides comprehensive study of the purposes and interpretation of national electrical wiring methods, including state and local regulations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ELE 150A.C.ANDD.C.CIRCUITFUNDAMENTALS (3-4 CR.)** Provides an intensive study of the fundamentals of direct and alternating current, resistance, magnetism, inductance and capacitance, with emphasis on practical applications. Lecture 2-3 hours. Laboratory 2 hours. Total 4-5 hours per week.

**ELE 151 ELECTRICAL TROUBLESHOOTING (3 CR.)** Teaches troubleshooting as applied to residential wiring and/or electrical appliances. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ELE 156 ELECTRICAL CONTROL SYSTEMS (3 CR.)** Includes troubleshooting and servicing electrical controls, electric motors, motor controls, motor starters, relays, overloads, instruments and control circuits. May include preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 160 POWER CONTROLS (3 CR.)** Introduces basic electrical and other controls used in home and industry. Includes application of panels, fuse boxes, breakers, and transformers, experiments to develop testing and troubleshooting techniques. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ELE 195 NATIONAL ELECTRICAL CODE (3 CR.)** Master's Code preparation class I. Prepares students to take National Electrical Code. Lecture 3 hours per week.

**ELE 238 CONTROL CIRCUITS (3 CR.)** Deals with the principles and applications of electrical devices for differentiation, integration and proportioning. Includes hardware and circuitry for AC and DC control devices as well as contractors, starters, speed controllers, time delays, limit switches, and pilot devices. Applies in the control of industrial equipment motors, servo units, and motor-driven actuators. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ELE 239 PROGRAMMABLE CONTROLLERS (2-3 CR.)** Deals with installation, programming, interfacing, and concepts of troubleshooting programmable controllers. Lecture 2-3 hours. Laboratory 0-3 hours per week. Total 2-6 hours per week.

**ELE 295 NATIONAL ELECTRICAL CODE (3 CR.)** Master's Code preparation class II. Prepares students to take National Electric Code. Lecture 3 hours per week.

#### **ELECTRONICS TECHNOLOGY (ETR)**

**ETR 100 ELECTRONIC PROBLEM SOLVING LABORATORY (1 CR.)** Focuses on enabling the student to improve skills in various areas of study. May include electronic measurements, circuit assembly, troubleshooting circuits, and computer applications to problem solving. Reading Level Requisite ENG 5. Laboratory 3 hours per week.

**ETR 113-114 D.C. AND A.C. FUNDAMENTALS (4 CR.)(4 CR.)** Studies D.C. and A. C. circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Must be taken in sequence. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 143 DEVICES AND APPLICATIONS I (3 CR.)** Teaches theory of active devices and circuits such as diodes, power supplies, transistors (BJT'S), amplifiers and their parameters, fets, and op amps. May include UJT'S, oscillators, RF amplifiers, thermionic devices, and others. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ETR 166 FUNDAMENTALS OF COMPUTER TECHNOLOGY (4 CR.)** Introduces computer use and literacy. May include operating systems, high level language programming, word processors, spreadsheets, and other generic software. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 167 LOGIC CIRCUITS AND SYSTEMS I (4 CR.)** Studies digital switching and logic circuits, number systems, Boolean algebra, logic gates and families. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 168 DIGITAL CIRCUIT FUNDAMENTALS (3 CR.)** Covers the fundamentals of digital logic and the study of digital circuits and their applications. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**ETR 228 COMPUTER TROUBLESHOOTING AND REPAIR (4 CR.)** Teaches procedures for isolating and correcting problems in computers and computer-related hardware. Emphasizes operational concepts, use of diagnostic software and troubleshooting equipment. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 231 PRINCIPLES OF LASERS AND FIBER OPTICS (3 CR.)** Teaches the theory and application of lasers and fiber optics. Includes optics, fiber optic cables and connectors, photo detectors, optical pulse generation, sensors, multiplexers, lasers, gas lasers, semiconductor lasers, laser safety and laser test instruments. May include preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ETR 241 ELECTRONIC COMMUNICATIONS I (3-4 CR.)** Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. May include broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware. Writing level requisite ENG 111. Lecture 2-3 hours. Laboratory 3 hours. Total 5-6 hours per week.

**ETR 246 BROADCAST SYSTEMS (3 CR.)** Teaches practical operating fundamentals and systems for students interested in the field of commercial broadcast electronics. Includes AM, FM and TV broadcast systems. May include field trips to various types of operations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ETR 248 INSTRUMENTS AND MEASUREMENTS (2 CR.)** Studies circuits used in electronics measurement and application of these circuits to test instruments such as oscilloscopes, electronic meters, and bridges. Stresses the accuracy of measurements, how instruments work, proper use of instruments, and calibration techniques. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**ETR 250 INTERMEDIATE ELECTRONICS (4 CR.)** Teaches theory and application of amplifiers and oscillators. Includes amplifier circuit configurations, amplifier classes, operational amplifiers, power amplifiers, bandwidth distortion, and principles of feedback. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 256-257-258 DEVICES AND CIRCUIT DESIGN I-II-III (4 CR.)(4 CR.)(4 CR.)** Studies devices, applications and design of circuits incorporating these devices. Utilizes accepted design and analysis techniques using appropriate device and circuit modes. May include diodes, transistors, thermistors, thermionic devices, op amps, power supplies, amplifiers, oscillators, filters and switching circuits. Writing level requisite ENG 111 for ETR 257 & 258. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 259 LINEAR INTEGRATED CIRCUITS (4 CR.)** Studies linear integrated devices, circuits and applications. May include analysis of linear IC's, op amps, op amp circuits, regulator circuits, oscillatory circuits, waveshaping circuits, active filter, signal processing; A/D and D/A conversion, modulation and demodulation, timers, special analog circuits, new topics and troubleshooting methods. Writing level requisite ENG 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 273-274-275 COMPUTER ELECTRONICS I-II-III (4 CR.)(4 CR.)(4 CR.)** Applies principles of digital electronics and microprocessors to familiarize the student with typical circuits used to interface computer and/or controllers with various I/O devices. May include exposure to high level programming as well as assembly language routines. Must be taken in sequence. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 294 TECHNICAL CERTIFICATION (2 CR.)** Reviews materials on various options of certification exams to prepare students for certification. May address any one option of certification. Course may be repeated for credit. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Variable hours per week.

## **EMERGENCY MEDICAL TECHNOLOGY (EMT)**

**EMT 105 FIRST RESPONDER (3 CR.)** Provides knowledge and proficiency in basic life support and in actions necessary to minimize patient discomfort and prevention of further complications. Meets requirements for Virginia certification as a first responder. Lecture 3 hours per week.

**EMT 106 EMERGENCY MEDICAL TECHNICIAN/BASIC (6 CR)** Prepares student for certification as a Virginia and National Registry EMT/B. Includes all aspects of pre-hospital basic life support as defined by the National Highway Traffic Safety Administration's National curriculum for Emergency Medicine Technician/Basic. Prerequisite: CPR certification at the Health Care Provider level. Lecture 4 hours. Laboratory 4 hours. Total 8 hours per week.

**EMT 118 PRE-HOSPITAL TRAUMA LIFE SUPPORT (1 CR.)** Prepares the student for certification as a Pre-Hospital Trauma Life Support (PHTLS) provider as defined by the American College of Surgeons. Lecture 1 hour per week.

**EMT 121 Basic Trauma Life Support (1 CR)** Prepares students for certification as a Basic Trauma Life Support Provider (BTLs) as defined by the American College of Emergency Physicians. Prerequisite: EMT, CCT, Paramedic, trauma Nurse, or Physician. Lecture 1 hour per week.

**EMT 123 Pediatric Basic Trauma Life Support (1 CR)** Prepares students for certification as a Pediatric Basic Trauma Life Support Provider (PBTLs) as defined by the American College of Emergency Physicians. Prerequisite: EMT, CCT, Paramedic, Trauma Nurse, or Physician. Prepares students for certification as a Pediatric Advanced Life Support (PALS). Lecture 1 hour per week.

**EMT 124 PEDIATRIC EDUCATION FOR PRE-HOSPITAL PROVIDERS (1CR.)** Prepares the student for certification as defined by the American Academy of Pediatrics. Covers primary assessment and emergency care of infants and children. Lecture 1 hour per week.

**EMT 176 INTRODUCTION TO ADVANCED LIFE SUPPORT (3 CR)** Prepares the student for initial ALS certification and for Virginia and National Registry Intermediate certification. Includes the theory and application of the following: foundations, human systems, pharmacology, overview of shock, venous access, airway management, patient assessment, respiratory emergencies, allergic reaction, and assessment based management. (Conforms to the 1998 Department of Transportation Curriculum for EMT-Intermediate/Paramedics.) Prerequisites: Current State or National Registry EMT-B and CPR. Reading Level Requisite ENG 4. Lecture 2-3 hours. Laboratory 2-3 hours. Total 4-6 hours per week.

**EMT 177 ASSESSMENT BASED MANAGEMENT (1 CR)** Prepares the student for Virginia and National Registry Paramedic certification. Focuses on integrating pathophysiological principles and assessment findings to formulate an impression and implement a treatment plan for patients with common complaints. Includes preparation for the National Registry Paramedic Exam. (Conforms to the 1998 Department of Transportation Curriculum for EMT - Paramedics.) Prerequisite: EMT 176. Reading Level Requisite ENG 4. Lecture 1 hour per week.

**EMT 181 ALS TRAUMACARE (3CR)** Continues DOT's National Paramedic Curriculum. Includes ALS pharmacology, drug and fluid administration with emphasis on trauma patient assessment and management. Prerequisite: EMT/B Certification. Other pre- and corequisites shall be determined by the college. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**EMT 182 ALS MEDICAL CARE (4 CR)** Continues DOT's National Paramedic Curriculum. Emphasis placed upon assessment and management of medical modalities to include cardiac, pulmonary, neurological, endocrine, and other related medical complaints. Prerequisite: EMT/B Certification. Other pre- and corequisites shall be determined by the college. Reading Level Requisite ENG 4. Lecture 4 hours per week.

**EMT 183 ALS SKILLS I (1 CR)** Focuses on the development of advanced life support skills for assessing and managing trauma, medical and specialty patients. Scenario practice in assessment based management. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 2 hours per week.

**EMT 184 ALS SKILLS II (2 CR)** Focuses on the development of advanced life support skills for assessing and managing trauma, medical and specialty patients. Scenario practice in assessment based management. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 4 hours per week.

**EMT 185 ALS SKILLS III (2 CR)** Focuses on the development of advanced life support skills for assessing and managing trauma, medical and specialty patients. Scenario practice in assessment based management. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 4 hours per week.

**EMT 186 ALS CLINICAL EDUCATION I (2 CR)** Provides supervised direct patient contact in appropriate in and out of hospital care facilities. Includes patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers and advanced life support units. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 4 hours per week.

**EMT 187 ALS CLINICAL EDUCATION II (2 CR)** Provides supervised direct patient contact in appropriate in and out of hospital care facilities. Includes patient care units such as the Emergency Department Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers and advanced life support units. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 4 hours per week.

**EMT 188 ALS CLINICAL EDUCATION III (3 CR)** Provides supervised direct patient contact in appropriate in and out of hospital care facilities. Includes patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers and advanced life support units. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 6 hours per week.

**EMT 209 PHARMACOLOGY (3 CR)** Focuses on the principles of pharmacokinetics, pharmacodynamics and drug administration. Includes routes and methods of medication administration, principles of math calculations, general actions of the common drug classifications. Emphasizes drugs used to manage respiratory, cardiac, central nervous system, and endocrine disorders and includes classification, action, indications, contraindications, precautions, and patient education. Includes an in-depth study of drugs used to manage emergency situations. Prerequisite: EMT 271 or Health Care Professional. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**EMT 216 PRE-HOSPITAL PHYSIOLOGICAL ASSESSMENT (2- 3 CR)** Focuses on the application of normal anatomy and physiological phenomena to ill and injured individuals. Emphasizes the analysis and interpretation of physiological data to assist in patient assessment and management. Prerequisite: EMT Certification. Reading Level Requisite ENG 4. Lecture 2-3 hours per week.

**EMT 220 INTRODUCTION TO CARDIOLOGY (2CR)** Focuses the interpretation of Lead II electrocardiograms and their significance. Includes an overview of anatomy and physiology of the cardiovascular system including structure, function, and electrical conduction of the heart. [Recommended as a prerequisite or corequisite for the Paramedic curriculum or for individuals responsible for EKG recognition in the workplace.] Prerequisites: EMT/B certification or Health Care Provider. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**EMT 223 PEDIATRIC ADVANCED LIFE SUPPORT (1 CR)** Provider as defined by the American Heart Association and American Academy of Pediatrics. Prerequisite: Second year RN or RESP student, EMT Cardiac Tech or higher; or graduate of health care provider program. Lecture 1 hour per week.

**EMT 245 OPERATIONS (2 CR.)** Prepares the student for Virginia and National Registry Paramedic certification. Includes the theory and application of the following: medical incident command, rescue awareness and operations, hazardous materials incidents, and crime scene awareness. (Conforms to the current Dept. of Transportation Curriculum for EMT-Paramedics.) Reading Level Requisite ENG 4. Lecture 1-2 hours per week. Laboratory 2 hours per week. Total 3-4 hours per week.

**EMT 251 ADVANCED CARDIAC LIFE SUPPORT PROVIDER COURSE (1 CR)** Prepares for certification as an Advanced Cardiac Life Support Provider. Follows course as defined by the American Heart Association. Prerequisite: Second year RN or RESP student, EMT Cardiac Tech or higher; or graduate of health care provider program. Lecture 1 hour per week.

**EMT 274 PATHOPHYSIOLOGY (3 CR)** Focuses on the pathological processes of disease with emphasis on the anatomical and physiological alterations of the human body by systems. Includes diagnosis and management appropriate to the advanced health care provider in and out of the hospital environment. Prerequisite: EMT 271. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**EMT 280 ALS SPECIALTY CARE (2 CR.)** Concludes didactic portion of DOT's National Paramedic Curriculum. Focuses on the assessment and management of specialty patients including behavioral, obstetrical, pediatric, periatric, and the chronically ill. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**EMT 282 ALS Clinical Education IV (3 CR)** Provides supervised direct patient contact in appropriate in and out of hospital care facilities. Includes patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers and advanced life support units. Prerequisite: EMT/B Certification. Other pre- and corequisites may be required by the college. Reading Level Requisite ENG 4. Laboratory 6 hours per week.

## English Placement Based on Assessment Test Credit

*View Test Credits online on your Degree Progress Report*

*If Test Credit is:*

ENG 1R  
ENG 1T  
ENG 3T  
ENG 4R  
ENG 4T  
ENG 5T  
ENG DVS

*The student may enroll in these ENG courses:*

ENG 1  
ENG 3, 100\*  
ENG 100, 111, 115\*\*  
ENG 4  
ENG 5, 100\*  
ENG 100, 111, 115\*\*  
ENG 100, 111, 115

\*ENG 100 requires Test Credits of ENG 1T or 3T; and ENG 4T or 5T; or ENG DVS.

\*\*ENG 111 or 115 requires Test Credits of ENG 3T and ENG 5T; or ENG DVS.

### ENGLISH (ENG)

**ENG 1 PREPARING FOR COLLEGE WRITING I (1-6 CR.)** Helps students discover and develop writing processes needed to bring their proficiency to the level necessary for entrance into their respective curricula. Guides students through the process of starting, composing, revising, and editing. Requisite: Test Credit of ENG 1R. Variable hours per week.

**ENG 3 PREPARING FOR COLLEGE WRITING II (1-6 CR.)** Emphasizes strategies within the writing process to help students with specific writing situations. Develops techniques to improve clarity of writing and raise proficiency to the level necessary for entrance into particular curricula. Requisite: Test Credit of ENG 1T or ENG 1 completed. Variable hours per week.

**ENG 4 READING IMPROVEMENT I (1-6 CR.)** Helps students improve their reading processes to increase their understanding of reading materials. Includes word forms and meanings, comprehension techniques, and ways to control reading pace. Requisite: Test Credit of ENG 4R. Variable hours per week.

**ENG 5 READING IMPROVEMENT II (1-6 CR.)** Helps students read critically and increase appreciation of reading. Guides students in making inferences, drawing conclusions, detecting relationships between generalizations and supporting details. Includes interpreting graphic aids and basic library skills. Requisite: Test Credit of ENG 4T or ENG 4 completed. Variable hours per week.

**ENG 50 READING AND WRITING FOR TEACHER ENTRANCE EXAMS (1-2 CR.)** Provides students with review and practice for the reading and writing portions of the licensure examination required of all beginning teachers in Virginia. Emphasizes critical thinking, reading for comprehension, the writing process, and test-taking. Prerequisite: ENG 111 suggested. Lecture 1-2 hours per week.

**ENG 100 BASIC OCCUPATIONAL COMMUNICATION (3 CR.)** Develops ability to communicate in occupational situations. Involves writing, reading, speaking, and listening. Builds practical skills such as handling customer complaints, writing various types of letters, and preparing a job interview. (Intended for certificate and diploma students.) Requisite: Test Credit of ENG 1T or 3T; and ENG 4T or 5T; or ENG DVS, or ENG 1 and 4 completed. Lecture 3 hours per week.

**ENG 111 COLLEGE COMPOSITION I (3 CR.)** Introduces students to critical thinking and the fundamentals of academic writing. Through the writing process, students refine topics; develop and support ideas; investigate, evaluate, and incorporate appropriate resources; edit for effective style and usage; and determine appropriate approaches for a variety of contexts, audiences, and purposes. Writing activities will include exposition and argumentation with at least one researched essay. Requisite: Test Credit of ENG 3T and 5T; or ENG DVS; or ENG 3 and 5 completed. Lecture 3 hours per week.

**ENGLISH 112 COLLEGE COMPOSITION II (3 CR.)** Continues to develop college writing with increased emphasis on critical essays, argumentation, and research, developing these competencies through the examination of a range of texts about the human experience. Requires students to locate, evaluate, integrate, and document sources and effectively edit for style and usage. Requisite: Test Credit of ENG 3T and 5T; or ENG DVS; or ENG 3 and 5 completed. Lecture 3 hours per week. Prerequisite is ENG 111.

**ENG 115 TECHNICAL WRITING (3 CR.)** Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in formatting, editing, and graphics. Introduces students to technical discourse through selected reading. Requisite: Test Credit of ENG 3T and 5T; or ENG DVS; or ENG 3 and 5 completed. Lecture 3 hours per week.

**ENG 121-122 INTRODUCTION TO JOURNALISM I-II (3 CR.)(3 CR.)** Introduces students to all news media, especially news gathering and preparation for print. Prerequisite is ENG 111 or 112 or divisional approval. Lecture 3 hours per week.

**ENG 210 ADVANCED COMPOSITION (3 CR.)** Helps students refine skills in writing nonfiction prose. Guides development of individual voice and style. Introduces procedures for publication. Prerequisite is ENG 112 or divisional approval. Lecture 3 hours per week.

**ENG 211-212 CREATIVE WRITING I-II (3 CR.) (3 CR.)** Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Divisional approval will be granted with the completion of ENG 111. Lecture 3 hours per week.

**ENG 241-242 SURVEY OF AMERICAN LITERATURE I-II (3 CR.)(3 CR.)** Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Prerequisite is ENG 112. Lecture 3 hours per week. May be taken out of sequence.

**ENG 243-244 SURVEY OF ENGLISH LITERATURE I-II (3 CR.)(3 CR.)** Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Prerequisite is ENG 112. Lecture 3 hours per week. May be taken out of sequence.

**ENG 251-252 SURVEY OF WORLD LITERATURE I-II (3 CR.)(3 CR.)** Examines major works of world literature. Involves critical reading and writing. Prerequisite ENG 112. Lecture 3 hours per week. May be taken out of sequence.

**ENG 256 LITERATURE OF SCIENCE FICTION (3 CR.)** Examines the literary and social aspects of science fiction, emphasizing development of ideas and techniques through the history of the genre. Involves critical reading and writing. Prerequisite is ENG 112 or divisional approval. Lecture 3 hours per week.

**ENG 278 APPALACHIAN LITERATURE (3 CR.)** Examines selected works of outstanding authors of the Appalachian region. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Divisional approval will be granted with the completion of ENG 111. Lecture 3 hours per week.

**ENG 281-282 AMERICAN FOLKLORE I-II (3 CR.) (3 CR.)** Examines traditional spoken, written and musical examples of American Folklore from various regional and ethnic groups. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. May be taken out of sequence. Lecture 3 hours.

## ENVIRONMENTAL SCIENCE (ENV)

**ENV 108 ENVIRONMENTAL MICROBIOLOGY (3 CR.)** Studies characteristics and activities of microorganisms, showing their essential relation to diagnosis, treatment, and prevention of disease. Explores fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to community health. Includes soil, water, wastewater, and industrial microbiology. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 110 INTRODUCTION TO WATER & WASTE-WATER TECHNOLOGY (3 CR.)** To provide an understanding of the basic principles of transportation, processing and disposal of water and wastewater. It will trace the flow of water from the source through treatment, storage, distribution, use, waste collection, treatment, and discharge back into the environment. In addition to the lectures, a laboratory will be provided consisting of a combination of field experiences as well as more traditional laboratory exercises. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 115 WATER PURIFICATION (3 CR.)** Explores principles of water purification including sedimentation, rapid sand filtration, chlorination, treatment, and prevention of disease. Studies fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to community health. Includes soil, water, wastewater, and industrial microbiology. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 149 WASTEWATER TREATMENT PLANT OPERATION (3 CR.)** Teaches principles, practices and desired function and operation of a variety of wastewater treatment unit processes. Evaluates the operation of processes by determination of the information and testing required for evaluation and performing the subsequent necessary calculations. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 190 COORDINATED INTERNSHIP IN WATER/WASTEWATER (4 CR.)** Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Variable hours.

**ENV 211-212 SANITARY BIOLOGY AND CHEMISTRY I-II (3 CR.)(3 CR.)** Teaches theory and laboratory techniques for control tests of water purification including bacteriology, color, turbidity, pH, alkalinity, hardness, coagulants, chlorides, fluorides, iron, manganese, detergents, bactericides, and nitrates. Includes in-plant studies at nearby plants. Studies theory and laboratory techniques for the determination of solids, dissolved oxygen, oxygen consumed, relative stability, bacteria, biochemical oxygen demand, organic nitrogen, volatile acids, toxic metals. Reading Level Requisite ENG 5. Must be taken in sequence. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ENV 220 ENVIRONMENTAL PROBLEMS (3 CR.)** Studies the relationship of man to his environment; ecological principles, population dynamics, topics of current importance including air, water, and noise pollution; poisoning and toxicity, radiation, conservation and management of natural resources. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**ENV 227 ENVIRONMENTAL LAW (3 CR.)** Introductory course in environmental law designed to acquaint the student with the different facets of law that affects the citizens of the world. Writing level requisite ENG 3. Lecture 3 hours per week.

**ENV 235 SOIL CONSERVATION AND SPOILS MANAGEMENT (3 CR.)** Teaches principles of soil conservation, erosion and sediment processes, spoils placement, both mechanical and natural methods of stabilization, and impacts of not practicing prudent soil conservation methods. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**ENV 290 COORDINATED INTERNSHIP IN ENVIRONMENT (4 CR.)** Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Variable hours.

**ENV 296 ON-SITE TRAINING IN LANDSCAPING (4 CR.)** Specializes in career orientation and training program without pay in selected business and industry, supervised and coordinated by the college. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Variable hours.

## **FORESTRY (FOR)**

**FOR 100 INTRODUCTION TO FORESTRY (3 CR.)** The purpose of this course is to learn the general concepts of forestry and forest resource use in the United States. Field trips and laboratory assignments will be made in place of a formal lab. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**FOR 115 DENDROLOGY (4 CR.)** Studies trees and shrubs botanically and commercially important to the forests of Eastern United States. Emphasizes field characteristics of trees and common shrubs of the Eastern United States. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**FOR 135 WILDLIFE AND FISH MANAGEMENT (4 CR.)** Introduces the principles of wildlife and fisheries management, emphasizes practices in United States. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**FOR 198 SEMINAR AND PROJECT IN INTRODUCTION TO AQUACULTURE (1-5 CR.)** Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Variable hours.

**FOR 201 FOREST MENSURATION I (4 CR.)** Teaches principles of forest measurements including basic elements of property boundary, location, forest mapping, techniques of tree measurement, and saw log and pulp wood scaling. Prerequisites FOR 100, FOR 115, MTH 113-114. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**FOR 202 FOREST MENSURATION II (4 CR.)** Teaches principles of timber cruising including both fixed and variable size plot techniques. Utilizes aerial photographs to locate land features, cruise tracts, timber types, and plot sample locations. Prerequisite: FOR 201. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**FOR 215 APPLIED SILVICULTURE (4 CR.)** Focuses on theory and practices involved in controlling the forest establishment, composition and growth. Laboratory emphasizes observation and application of various silvicultural procedures including site preparation, regeneration, and intermediate treatments. Prerequisites FOR 100 and FOR 115. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**FOR 227 TIMBER HARVESTING (5 CR.)** Teaches harvesting methods including physical layout, economics, contracts, silvicultural water management, protection consideration, and woods safety. Co-requisite: FOR 202. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

**FOR 229 SAWMILLING (5 CR.)** Studies arrangement, installation, and operation of small sawmill consisting of head saw, edger, and trimmer for the production of quality hardwood and softwood lumber. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

**FOR 235 GAMEFISH ECOLOGY (2 CR.)** Focuses on the ecology, life history and identification of fresh water game fish, including basic principles of limnology. Lecture 2 hours per week.

**FOR 237 WILDLIFE ECOLOGY (3 CR.)** Studies wildlife communities and their environmental relationships. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**FOR 245 FOREST PRODUCTS I (2 CR.)** Introduces forest products. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 2 hours per week.

**FOR 290 COORDINATED INTERNSHIP IN FORESTRY (4 CR.)** Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Variable hours.

## **FRENCH (FRE)**

**FRE 101-102 BEGINNING FRENCH I-II (4 CR.) (4 CR.)** Introduces understanding, speaking, reading, and writing skills and emphasizes basic French sentence structure. Reading Level Requisite ENG 111. Lecture 4 hours per week. May include one additional hour of oral practice per week.

## **GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

**GIS 195 UNDERSTANDING GEOGRAPHICAL DATA ( 4 CR.)** The course provides the student an introduction to geographic data and the principles behind their construction. Introduces the concepts for measuring locations and characteristics of entities in the real world. Exposes the student to the limitations and common characteristics of geographic data. Prerequisite: IST 117 or instructor approval.

**GIS 200 GEOGRAPHICAL INFORMATION SYSTEMS I (4 CR.)** Provides hands on introduction to a dynamic desktop GIS (Geographic Information system). Introduces the components of a desktop GIS and their functionality. Emphasizes manipulation of data for the purpose of analysis, presentation, and decision-making. Prerequisite: IST 117 or instructor approval.

**GIS 201 GEOGRAPHICAL INFORMATION SYSTEMS II (4 CR.)** Provides a continuation of GIS 200, with emphasis on advanced topics in problem solving, decision-making, modeling, programming, and data management. Covers map projections and data formats, and methods for solving the problems they create. Prerequisite: GIS 200

**GIS 295–3D ANALYST** This course introduces the use of ArcView 3D Analyst to display, create, and analyze spatial data in three dimensions. Covers 3D shape files, 3D data formats such as Tin's, DEM's, grids and controlling the perspective and scale of 3D data through rotating, panning and zooming. Prerequisite: GIS 201

**GIS 295 MIGRATING FROM ARCVIEW 3 TO ARCVIEW 8 (4 CR.)** This course introduces ArcView 3.x users to the features and architecture of ArcView 8. Students learn how the new ArcView 8 terminology and features compare with ArcView 3.x, how to use the new Windows-based applications: ArcMap, ArcCatalog, and ArcToolbox, and how these applications work together. Students also learn how to create, edit, and georeference spatial data, as well as manipulate tabular data, query a GIS database, perform spatial analysis, and present their data clearly and efficiently using maps and charts. Prerequisite: GIS 201

**GIS 295 INTRODUCTION TO REGIONAL AND URBAN PLANNING (4 CR.)** This course provides a basic understanding of urban and regional planning concepts and tasks how they can be managed using GIS. Prerequisite: GIS 201

**GIS 295 –GIS FOR TAX ASSESSMENT (4 CR.)** This course introduces the use of GIS in the local government tax assessment process. Includes how to create spatial queries, produce maps, generate statistics, manipulate tabular data, use charts, and employ other technical skills in major topic areas including special regulations, ratio studies, comparable sales, and parcel data development and maintenance. Prerequisite: GIS 201

## **GEOGRAPHY (GEO)**

**GEO 210 PEOPLE AND THE LAND: INTRO TO CULTURAL GEOGRAPHY (3 CR.)** Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Reading and writing level requisite ENG 111. Lecture 3 hours per week.

## **GEOLOGY (GOL)**

**GOL 105 PHYSICAL GEOLOGY (4 CR.)** Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Reading and writing level requisite ENG 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## **GOVERNMENT (SEE POLITICAL SCIENCE)**

## **HEALTH (HLT)**

**HLT 100 FIRST AID AND CARDIOPULMONARY RESUSCITATION (3 CR.)** Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation. Reading Level Requisite ENG 4.

**HLT 105 CARDIOPULMONARY RESUSCITATION (1 CR.)** Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Reading Level Requisite ENG 4. Lecture 1 hour per week.

**HLT 106 FIRST AID AND SAFETY (2 CR.)** Focuses on the principles and techniques of safety and first aid. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**HLT 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (3 CR.)** Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week.

**HLT 116 PERSONAL WELLNESS (3 CR.)** Explores the relationship between personal health and physical fitness as they apply to individuals in today's society. Includes nutrition, weight control, stress, conditioning, and drugs. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**HLT 119 FIRST RESPONDER (3 CR.)** Provides knowledge and proficiency in basic life support and in actions necessary to minimize patient discomfort and prevention of further complications. Meets requirements for Virginia Certification as a first responder. This course is dually listed under EMT, as 105. It is also listed under the Health prefix to allow EMT's business and industry personnel to enroll in a health class to apply toward degree or certificate HLT requirements. Reading Level Requisite ENG 4. Total 3 hours per week.

**HLT 121 INTRODUCTION TO DRUG USE AND ABUSE (3 CR.)** Explores the use and abuse of drugs in contemporary society with emphasis upon sociological, physiological, and psychological effects of drugs. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**HLT 122 INTRODUCTION TO ALCOHOL ABUSE AND CONTROL (1 CR.)** Explores the physiological, psychological, and sociological effects of alcohol. Studies why people drink, disease concepts, alcohol tolerance curves, and alcohol's effect on the operation of a motor vehicle. Reading Level Requisite ENG 4. Lecture 1 hour per week.

**HLT 130 NUTRITION AND DIET THERAPY (1-2 CR)** Studies nutrients, sources, functions, and requirements with an introduction to diet therapy. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 1 hour per week.

**HLT 135 CHILD HEALTH AND NUTRITION (3 CR.)** Focuses on the physical needs of the preschool child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Reading Level Requisite ENG 4. Lecture 3 hours per week.

**HLT 140 ORIENTATION TO HEALTH RELATED PROFESSIONS (2 CR.)** Explores the interrelated roles and functions of various members of the health team. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**HLT 145 ETHICS FOR HEALTH CARE PERSONNEL (2 CR.)** Focuses on ethical concepts of health care. Emphasizes confidentiality, maintaining patient records, personal appearance, professionalism with patients/clients, associates, and an awareness of health care facilities. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**HLT 230 PRINCIPLES OF NUTRITION AND HUMAN DEVELOPMENT (3 CR.)** Teaches the relationship between nutrition and human development. Emphasizes nutrients, balanced diet, weight control, and the nutritional needs of an individual. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**HLT 261-262 BASIC PHARMACY I-II (3 CR.)(3 CR.)** Explores the basics of general pharmacy, reading prescriptions, symbols, packages, pharmacy calculations. Teaches measuring compounds of drugs, dosage forms, drug laws, and drug classifications. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

#### **HEALTH CARE TECHNOLOGY (HCT)**

**HCT 101 HEALTH CARE TECHNICIAN I (3-4 CR.)** Teaches basic care skills with emphasis on physical, social, emotional, and spiritual needs of patients. Covers procedures, communications and interpersonal relations; observation, charting and reporting; care planning, safety and infection control; anatomy and physiology, nutrition and patient feeding; ethics, death and dying. Prepares multi-skilled health care workers to care for patients of various ages with special emphasis on geriatric nursing, home health, long and short term care facilities. Reading Level Requisite ENG 4. Lecture 3-4 hours per week.

**HCT 102 HEALTH CARE TECHNICIAN II (3-4 CR.)** Applies theory through laboratory experience for health care technicians to work in home health, long and short term facilities. Prerequisite: HCT 101. Reading Level Requisite ENG 4. Lecture 1-2 hours. Laboratory 2-6 hours. Total 4- hours per week.

**HCT 115 Medication Administration Training (2-3 CR.)** Prepares students to safely administer, or to assist in client self-administration of medications in specific settings. Includes practice. Meets curriculum requirements of the State Board of Nursing. Reading Level Requisite ENG 4. Lecture 1-2 hours. Laboratory 2-6 hours. Total 4-8 hours per week.

#### **HEALTH INFORMATION TECHNOLOGY (HIT)**

**HIT 101 MEDICAL RECORD TECHNOLOGY I (4 CR.)** Introduces values, uses, and content of the medical record. Defines numbering, filing, and retention policies and practices. Reading Level Requisite ENG 5. Lecture 3 hours per week. Laboratory 3 hours per week. Total 6 hours per week.

**HIT 111-112 MEDICAL TERMINOLOGY I-II (3 CR.)(3 CR.)** Introduces the student to the language used in the health record. Includes a system-by-system review of anatomic disease, and operative terms, abbreviations, radiology procedures, laboratory tests, and pharmacology terms. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**HIT 121-122 MEDICAL TRANSCRIPTION I-II (4 CR.)(4 CR.)** Develops skills in the transcription of various medical record reports, use of transcription references and proof reading reports. Evaluates the productivity and organization of transcription departments/ services and the quality of transcribed reports and equipment utilized. Prerequisite: typing 40 words per minute. Lecture 1 hour per week. Laboratory 6 hours per week. Total 7 hours per week.

**HIT 150 HEALTH RECORDS MANAGEMENT (3 CR.)** Presents documentation format and content of the medical record relevant to the coding function. Introduces application of standard techniques for filing, maintenance, and acquisition of health information. Examines the processes of collecting, computing, analyzing, interpreting, and presenting data related to health care services. Includes legal and regulatory guidelines for the control and use of health information data. Lecture 3 hours per week.

#### **HISTORY (HIS)**

**HIS 101-102 HISTORY OF WESTERN CIVILIZATION I-II (3 CR.)(3 CR.)** Examines the development of western civilization from ancient times to the present. The first semester ends with the seventeenth century; the second semester continues through modern times. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**HIS 121-122 UNITED STATES HISTORY I-II (3 CR.)(3 CR.)** Surveys United States history from its beginning to the present. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week. May be taken out of sequence.

#### **HORTICULTURE (HRT)**

**HRT 115 PLANT PROPAGATION (3 CR.)** Teaches principles and practices of sexual and asexual methods. Examines commercial and home practices. Provides experience in techniques using seed-spores, cuttings, grafting, budding, layering and division. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 126 HOME LANDSCAPING (3 CR.)** Studies current approaches to improving home landscapes. Emphasizes planning, proper implementation, and methods of caring for the landscape. Lecture 3 hours per week.

**HRT 137 ENVIRONMENTAL FACTORS IN PLANT GROWTH (3 CR.)** Explores environmental factors which affect plant growth, including rainfall, humidity, wind, temperature, sunlight, irrigation, heating, and shading. Examines methods of inducing and breeding dormancy, lighting, and shading systems, and the relationship between day length and flowering. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**HRT 225 NURSERY AND GARDEN CENTER MANAGEMENT (3 CR.)** Discusses aspects of nursery management, including culture, plant handling, facilities layout, and business management. Discusses aspects of garden center management, including planning and layout, purchasing, product selection, marketing, merchandising, and display. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 226 GREENHOUSE MANAGEMENT (3 CR.)** Discusses the theoretical and applied practices of managing a greenhouse facility. Emphasizes greenhouse construction and design, environmental control, energy conservation, and related topics. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 269 PROFESSIONAL TURF CARE (3 CR.)** Discusses careers in the turf industry. Stresses turf grass identification, selection, culture, propagation, and pest control from a commercial standpoint. Surveys turf care operations and use of common equipment. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

## **HUMAN SERVICES (HMS)**

**HMS 100 INTRODUCTION TO HUMAN SERVICES (3 CR.)** Introduces human service agencies, roles and careers. Presents perspective of the field as it relates to human services today. Additional topics include values clarification and needs of target populations. Writing level requisite ENG 3. Lecture 3 hours per week.

## **HUMANITIES (HUM)**

**HUM 100 SURVEY OF THE HUMANITIES (3 CR.)** Introduces the humanities through the art, literature, music and philosophy of various cultures and historical periods. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**HUM 111-112 GREAT BOOKS I-II (3 CR.) (3 CR.)** Introduces selected great works of philosophy and literature, with emphasis on close analysis of the text. Lecture 3 hours per week. Prerequisite: placement recommendation for ENG 111. Reading Level Requisite ENG 111. Writing level requisite ENG 111. May be taken out of sequence.

**HUM 201 SURVEY OF WESTERN CULTURE I (3 CR.)** Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Reading Level Requisite ENG 3. Lecture 3 hours per week.

**HUM 202 SURVEY OF WESTERN CULTURE II (3 CR.)** Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week.

**HUM 260 SURVEY OF TWENTIETH-CENTURY CULTURE (3 CR.)** Explores literature, visual arts, philosophy, music, and history of our time from an interdisciplinary perspective. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

## **INDUSTRIAL DISTRIBUTION (IDT)**

**IDT 100 INTRODUCTION TO INDUSTRIAL DISTRIBUTION (3 CR.)** Provides an overview of the wholesale product distribution as it pertains to manufacturing. Features "Making A Profit", job titles and functions, traits and etiquette, making internal and external presentations, negotiating, use of electronic data systems, telemarketing, customer service, warehousing, transportation and interviewing for a position. Writing level requisite ENG 3. Lecture 3 hours per credit.

**IDT 205 INDUSTRIAL DISTRIBUTION OPERATIONS (3 CR.)** Studies current approaches for developing and maintaining optimum manufacturer distributor relations including the buying, warehousing, selling, financing, delivery, installing, and servicing of products. Prerequisite IDT 100. Lecture 3 hours per week.

**IDT 215 INDUSTRIAL DISTRIBUTION COMMUNICATION (3 CR.)** Introduces the variety of communications needed in successful manufacturing and distribution operation. Features the exchange of ideas verbally, in writing, and by electronic devices to internal personnel, customers, manufacturers, and government agencies. Prerequisite IDT 100. Writing level requisite ENG 3. Lecture 3 hours per week.

## **INDUSTRIAL ENGINEERING TECHNOLOGY (IND)**

**IND 101-102 QUALITY ASSURANCE TECHNOLOGY I-II (3 CR.) (3 CR.)** Studies principles and techniques of quality engineering for the management, design engineering economics, production, and assurance of quality. Emphasizes fundamentals of total quality assurance for product and process control. May include design review, fundamentals of statistics procurement control, sampling and control chart systems, quality reporting, process capability analysis, tool and gauge control, documentation, or troubleshooting quality control. Lecture 3 hours per week.

**IND 106 INDUSTRIAL ENGINEERING TECHNOLOGY (3 CR.)** Introduces basic skills required for a career in industrial engineering technology. May include basic statistics for engineering technicians, the SI system, graphic analysis, and careers as an engineering technician. Lecture 3 hours per week.

**IND 108 TECHNICAL COMPUTER APPLICATIONS (3 CR.)** Develops keyboarding proficiency for technology application and word processing as applied to technology. Presents an introduction to disk operating systems as related to technical applications. Includes demonstrations of selected technical topics such as CAD, CNC, Graphic illustration I/Os involving PLCs, telecommunications (modems), and process control. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**IND 125 INSTALLATION AND PREVENTIVE MAINTENANCE (3 CR.)** Studies practices in the installation of machinery, including mounting, grouting, leveling, and alignment. Examines methods of preventive maintenance including inspection, scheduled maintenance, controls, record keeping, repair parts stocking, and safety considerations. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**IND 126 MAINTENANCE SCHEDULING AND PLANNING (2 CR.)** Studies organization of a maintenance department including planning, schedule, budgets, training, work measurement systems, labor standards, and preventive maintenance. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**IND 137 TEAM CONCEPTS AND PROBLEM SOLVING (3 CR.)** Provides instruction in the tools and methods for improving processes. Includes team organization and tools to gather, analyze, and display data. Lecture 3 hours per week.

**IND 160 INTRODUCTION TO ROBOTICS (3 CR.)** Studies evolution and history of robotics with an emphasis on automated and flexible manufacturing. Presents advantages and limitations of present robot systems. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**IND 235 STATISTICAL QUALITY CONTROL (3 CR.)** Gives overview of the quality control function within industry. May include the organization, cost, and techniques of quality control. Emphasizes essentials and applications of statistics in the quality control function. Writing level requisite ENG 3. Lecture 3 hours per week.

## **INTERPRETER EDUCATION**

**INT 107 TRANSLATION SKILLS (3 CR.)** Further develops fundamental skills needed for the task of interpreting Targets comprehending source language (either ASL or English), transferring content into memory store (breaking from original form), restructuring into target language, maintaining message equivalence, conveying implicit and inferred information, and applying appropriate discourse structure. Review Process Model of interpreting, and uses it to analyze translations. Further develops feedback skills essential to the team interpreting process. Prerequisite: INT 105. Lecture 3 hours per week.

**INT 130 INTERPRETING: AN INTRODUCTION TO THE PROFESSION (3 CR.)** Introduces basic principles and practices of interpreting, focusing on the history of the profession, logistics of interpreting situations, regulatory and legislative issues, resources, and the Code of Ethics. Describes the state quality assurance screening and national certification exam systems, including test procedures. Lecture 3 hours per week.

**INT 133 ASL-TO-ENGLISH INTERPRETATION I (3-4 CR.)** Begins consecutively interpreting monologues from the source language (ASL) to the target language (English). Watch entire ASL monologues process them, analyze them, then choose appropriate English to match the message. Eventually interpret the monologues into English. Puts interpreting theory into practice in a lab environment. Conducts research in the field of interpretation. Develops team interpreting techniques. Interacts with consumers of ASL-English interpretation. Prerequisite: INT 107. Lecture 2-3 hours. Laboratory 2 hours. Total 4-5 hours per week.

**INT 141 TRANSLITERATING I (3 CR.)** Studies the skills required to transmit spoken English into a manual code for English or an interpreting product with more obvious English influences, and vice versa. Introduces a variety of manual codes and their relationship to American Sign Language and Contact Signing. Prerequisite: INT 107. Lecture 3 hours per week.

**INT 235 INTERPRETING IN THE EDUCATIONAL SETTING (3 CR.)** Examines the role, responsibilities, and communication techniques of the educational setting. Provides information on the nature and needs of the deaf student and methods used in working with students who are Deaf and hard of hearing. Describes various communication systems used for a variety of educational environments. Prerequisites: ASL 102 and INT 130. Lecture 3 hours per week.

**INT 250 DIALOGIC INTERPRETATION I (3 CR.)** Apply interpreting fundamentals. Interpret dialogs between spoken English and ASL users. Analyze interpretations by using a Process Model of Interpreting. Conduct research. Practice team interpreting skills in an interactive interpreting environment. Prepare for the interactive nature of standard interpreting evaluations. Prerequisites: INT 233 and INT 234. Lecture 3 hours week.

## **INFORMATION TECHNOLOGY ESSENTIALS (ITE)**

**ITE 100 INTRODUCTION TO INFORMATION SYSTEMS (3 CR.)** Covers the fundamentals of computers and computing and topics which include impact of computers on society, ethical issues, and terminology. This course provides discussion about available hardware and software as well as their application. Writing level requisite ENG 3.

**ITE 102 COMPUTERS AND INFORMATION SYSTEMS (2 CR.)** Introduces terminology, concepts, and methods of using computers in information systems. This course teaches computer literacy, not intended for Information Technology majors.

**ITE 115 BASIC COMPUTER LITERACY (3 CR.)** Covers computer concepts and internet skills and uses a software suite which includes word processing, spreadsheet, database, and presentation software to demonstrate skills required for computer literacy.

**ITE 126 OPERATING SYSTEM FUNDAMENTALS (2 CR.)** Includes instruction in commonly used internal and external commands including the use of subdirectories and creating basic batch files.

**ITE 127 MICROCOMPUTER SOFTWARE: BEGINNING WINDOWS (2 CR.)** Imparts first-time users with sufficient information to make practical use of the Windows software package. This course also presents the basics of the features and applications included in the Windows operating system package.

**ITE 130 INTRODUCTION TO INTERNET SERVICES (3 CR.)** Provides instruction to provide students with a working knowledge of Internet terminology and services including e-mail, WWW browsing, search engines, ftp, file compression, and other services using a variety of software packages. This course provides instruction for basic web construction.

**ITE 131 SURVEY OF INTERNET SERVICES (1 CR.)** Introduces students to basic Internet terminology and services including e-mail, WWW browsing, search engines, ftp telnet, and other services.

**ITE 140 SPREADSHEET SOFTWARE (3 CR.)** Covers the use of spreadsheet software to create spreadsheets with formatted cells and cell ranges, control pages, multiple sheets, charts, and macros. Topics will include: type and edit text in a cell, enter data on multiple worksheets, work with formulas and functions, create charts, pivot tables, and styles, insert headers and footers, and filter data. This course covers MOS Excel objectives.

**ITE 141 MICROCOMPUTER SOFTWARE: SPREADSHEETS (2 CR.)** Gives first-time users sufficient information to make practical use of spreadsheet software using the basics of building spreadsheets.

**ITE 150 DESKTOP DATABASE SOFTWARE (3 CR.)** Incorporates instruction in planning, defining, and using a database; performing queries; producing reports; working with multiple files; and concepts of database programming. Course topics include database concepts, principles of table design and table relationships, entering data, creating and using forms, using data from different sources, filtering, creating mailing labels. This course covers MOS Access certifications objectives.

**ITE 170 MULTIMEDIA SOFTWARE (3 CR.)** Explores technical fundamentals of creating multimedia projects with related hardware and software. Students will learn to manage resources required for multimedia production and evaluation and techniques for selection of graphics and multimedia software.

**ITE 182 USER SUPPORT/HELP DESK PRINCIPLES (3 CR.)** Introduces a variety of tools and techniques that are used to provide user support in help desk operations. This course includes help desk concepts, customer service skills, troubleshooting problems, writing for end users, help desk operations, and software needs analysis, facilities management, and other topics related to end user support. Writing level requisite ENG 3.

**ITE 215 ADVANCED COMPUTER LITERACY (3 CR.)** Incorporates advanced computer concepts including the integration of a software suite.

#### **INFORMATION TECHNOLOGY DATABASE (ITD)**

**ITD 110 WEB PAGE DESIGN I (3 CR.)** Stresses a working knowledge of web site designs, construction, and management using HTML or XHTML. Course content includes headings, lists, links, images, image maps, tables, forms, and frames.

**ITD 134 PL/SQL PROGRAMMING (3 CR.)** Presents a working introduction to PL/SQL programming within the Oracle RDBMS environment. Course content includes PL/SQL fundamentals of block program structure, variables, cursors and exceptions, and creation of program units of procedures, functions, triggers and packages.

**ITD 210 WEB PAGE DESIGN II (3 CR.)** Incorporates advanced techniques in web site planning, design, usability, accessibility, advanced site management, and maintenance utilizing web editor software(s).

#### **INFORMATION TECHNOLOGY NETWORKING (ITN)**

**ITN 101 INTRODUCTION TO NETWORK CONCEPTS (3 CR.)** Provides instruction in networking media, physical and logical topologies, common networking standards and popular networking protocols. Course content emphasizes the TCP/IP protocol suite and related IP addressing schemes, including CIDR. Course content also includes selected topics in network implementation, support and LAN/WAN connectivity.

**ITN 110 WINDOWS 2000 PROFESSIONAL (3 CR.)** Introduces an overview of instruction in installation, configuration, administration, and troubleshooting of Windows 2000 Professional as a desktop operating system in a networked data communications environment.

**ITN 111 WINDOWS 2000 SERVER (3 CR.)** Covers basic instruction in various network protocols, name resolution services, remote access, security, and print installation, configuration, administration, monitoring, and troubleshooting of Windows 2000 Server in an Active Directory domain environment.

**ITN 154 NETWORKING FUNDAMENTALS CISCO (4 CR.)** Provides introduction to networking using the OSI reference model. Course content includes data encapsulations, TCP/IP suite, routing, IP addressing, and structured cabling design and implementation.

**ITN 155 INTRODUCTORY ROUTING CISCO (4 CR.)** Features an introduction to basic router and configuration using Cisco IOS software. Course content includes system components, interface configuration, IP network design, troubleshooting techniques, configuration and verification of IP addresses, and router protocols.

**ITN 156 BASIC SWITCHING AND ROUTING CISCO (4 CR.)** Centers instruction in LAN segmentation using bridges, routers, and switches. Course content includes fast Ethernet, access lists, routing protocols, spanning tree protocol, virtual LANs, and network management.

**ITN 157 WAN TECHNOLOGIES CISCO (4 CR.)** Concentrates on an introduction to Wide Area Networking (WANs). Course content includes WAN design, LAPB, Frame Relay, ISDN, HDLC, and PPP.

**ITN 211 WINDOWS 2000 NETWORK SECURITY DESIGN (NSD) (3 CR.)** Designing security framework for small, medium, and enterprise networks using Microsoft Windows 2000 technologies. This course contains information that provides secure access to local network, secure access to remote users and remote offices, secure access between private and public networks, and secure access to partners.

**ITN 215 WINDOWS 2000 NETWORK INFRA-STRUCTURE DESIGN (NID) (3 CR.)** Provides instruction in analysis and design of business requirements for a network infrastructure, including network topology, routing, IP addressing, WINS, DNS, VPN remote access and telephony in an enterprise environment. Writing level requisite ENG 3.

**INFORMATION TECHNOLOGY PROGRAMMING (ITP)**

**ITP 112 VISUAL BASIC.NET I (3 CR.)** Concentrates instruction in fundamentals of object-oriented programming using Visual Basic.NET and the .NET framework. Course content emphasizes program construction, algorithm development, coding, debugging, and documentation of graphical user interface applications.

**ITP 136 C# PROGRAMMING I (3 CR.)** Presents instruction in fundamentals of object-oriented programming and design using C#. Course content emphasizes program construction, algorithm development, coding, debugging, and documentation of applications within the .NET Framework.

**ITP 251 SYSTEMS ANALYSIS AND DESIGN (3 CR.)** Focuses on application of information technologies (IT) to system life cycle methodology, systems analysis, systems design, and system implementation practices. Methodologies related to identification of information requirements, feasibility in the areas of economic, technical and social requirements, and related issues are included in course content. Software applications may be used to enhance student skills.

**ITP 298 CAPSTONE (3 CR.)** Includes advanced study in areas specifically related to the student's occupational emphasis. This course includes the required completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field.

**LEGAL ADMINISTRATION (LGL)**

**LGL 110 INTRODUCTION TO LAW AND THE LEGAL ASSISTANT (3 CR.)** Introduces various areas of law in which a legal assistant will be working. Includes intense study of court system (Virginia and federal) as well as a brief overview of criminal law, torts, domestic relations, evidence, ethics, the role of the legal assistant and other areas of interest. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**LGL 115 REAL ESTATE LAW FOR LEGAL ASSISTANTS (3 CR.)** Studies law of real property, and gives in-depth survey of more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting problems involving these various instruments. Includes research projects, and studies the system of recording and search of public documents. Writing level requisite ENG 3. Lecture 3 hours per week.

**LGL 117 FAMILY LAW (3 CR.)** Studies elements of a valid marriage, grounds for divorce and annulment, separation, defense, custody, support, adoptions, and applicable tax consequences. Includes property settlement, pre- and antenuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Writing level requisite ENG 3. Lecture 3 hours per week.

**LGL 125 LEGAL RESEARCH (3 CR.)** Provides an understanding of various components of a law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, Shepards, ALR and other research tools. Writing level requisite ENG 111. Lecture 3 hours per week.

**LGL 126 LEGAL WRITING (3 CR.)** Studies proper preparation of various legal documents, including legal memoranda, letters, and pleadings. Involves practical applications. May include case and appellate briefs. Prerequisite ENG 111 or permission of instructor. Writing level requisite ENG 3. Lecture 3 hours per week.

**LGL 218 CRIMINAL LAW (3 CR.)** Focuses on major crimes, including their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia law. May include general principles of applicable constitutional law and criminal procedure. Writing level requisite ENG 3. Lecture 3 hours per week.

**LGL 130 LAW OFFICE ADMINISTRATION AND MANAGEMENT (3 CR.)** Introduces management principles and systems applicable to law firms, including record keeping, disbursements, escrow accounts, billing, and purchasing. Studies accounting methods applicable to the law firms. Lecture 3 hours per week.

**LGL 216 TRIAL PREPARATION AND DISCOVERY PRACTICE (3 CR.)** Studies the preparation of a trial notebook, pretrial orders, use of interrogatories, depositions and other discovery tools used in assembling evidence in preparation for trial or an administrative hearing. Lecture 3 hours per week.

**LGL 225 ESTATE PLANNING AND PROBATE (3 CR.)** Introduces various devices used to plan an estate, including wills, trusts, joint ownership and insurance. Considers various plans in light of family situations and estate objectives. Focuses on practices involving administration of an estate including taxes and preparation of forms. Writing level requisite ENG 3. Lecture 3 hours per week.

**LGL 226 REAL ESTATE ABSTRACTING (3 CR.)** Reviews aspects of abstracting title to real estate, recordation of land transactions, liens, grantor-grantee indices, warranties, covenants, restrictions, dower and curtesy rights and easements. Lecture 3 hours per week.

**LGL 230 LEGAL TRANSACTIONS (3 CR.)** Introduces commercial principles and practices and Uniform Commercial Code. Emphasizes contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach, torts, sales, negotiable instruments, consumer protection, insurance, wills and inheritance, bankruptcy and statute of limitations. Writing level requisite ENG 111. Lecture 3 hours per week.

**LGL 290 COOPERATIVE INTERNSHIP IN LEGAL ASSISTING (3 CR.)** In order to apply legal assisting theory to practice, this cooperative venture will allow students to participate in onsite training in actual paralegal settings. Writing level requisite ENG 3. Variable hours per week.

## MARKETING (MKT)

### **MKT 100 PRINCIPLES OF MARKETING (3 CR.)**

Presents principles, methods and problems involved in the distribution and marketing of goods and services to industrial and ultimate consumers. Introduces various marketing middlemen: wholesaler, retailer, broker, agent including cooperative and trade association, shippers, stores and facilitators. Discusses present-day problems and associations, shippers, stores, and facilitators. Discusses present-day problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of the marketing mix and market research, plus legal, social and ethical considerations in marketing. Writing level requisite ENG 3. Lecture 3 hours per week.

**MKT 110 PRINCIPLES OF SELLING (3 CR.)** Presents fundamental aspects of personal selling, sales, ethics, and selling methods. Emphasizes professional sales techniques. Examines organization necessary for a well coordinated sales effort, including the training of sales personnel for maximum efficiency in selling and organization of the sales division within the business enterprise. Introduces sales management in planning, organizing, directing and controlling the total sales effort. Lecture 3 hours per week.

**MKT 216 RETAIL ORGANIZATION AND MANAGEMENT (3 CR.)** Examines the organization of the retail establishment to accomplish its goals in an effective and efficient manner. Includes study of site location, internal layout, store operations, and security. Examines the retailing mix, the buying or procurement process, pricing, and selling. Studies retail advertising, promotion, and publicity as a coordinated effort to increase store traffic. Lecture 3 hours per week.

**MKT 270 MARKETING MANAGEMENT (3 CR.)** Expands knowledge of marketing through case studies. Focuses on how marketing strategies are planned and utilized in the market place to accomplish the goals of the organization. Lecture 3 hours per week.

**MKT 282 PRINCIPLES OF E-COMMERCE (3 CR.)** Studies on-line business strategies, and the hardware and software tools necessary for Internet commerce. Includes the identification of appropriate target segments, the development of product opportunities, pricing structures, distribution channels and execution of marketing strategies. sLecture 3 hours per week.

## Mathematics Placement Based on Assessment Test Results

*View Test Credits online on your Degree Progress Report.*

*If Test Credit is:*

*courses:*

MTH 2R

MTH 2T, 3T, 4T, or DVS

MTH 3T, 4T, or DVS

(and 'C' in Algebra I or II in high school for 04, 06, or 126)

MTH 4T or DVS

(and 'C' in Algebra II and Geometry in high school for 151, 152, 157, or 163)

*The student may enroll in these MTH*

*MTH 2*

*MTH 3, 105, or 141*

*MTH 4, 6, 105, 126, or 141*

*MTH 105, 126, 141, 151, 152, 157, or 163*

## MATHEMATICS (MTH)

### **MTH 1 DEVELOPMENTAL MATHEMATICS (1-5 CR.)**

Designed to bridge the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematics courses in technical, professional, and transfer program. Topics may include arithmetic, algebra, geometry, and trigonometry. Credits not applicable toward graduation.

**MTH 2 ARITHMETIC (1-5 CR.)** Covers arithmetical principles and computations including whole numbers, fractions, decimals, percents, measurement, graph interpretation, geometric forms, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable toward graduation. Reading Level Requisite ENG 4. Requisite: Test Credit of MTH 2R. Variable hours per week.

**MTH 3 ALGEBRA I (1-5 CR.)** Covers the topics of Algebra I including real numbers, equations and inequalities, exponents, polynomials, Cartesian coordinate system, rational expressions, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Reading Level Requisite ENG 4. Requisite: Test Credit of MTH 2T or MTH 2 completed. Credits not applicable toward graduation. Variable hours per week.

**MTH 4 ALGEBRA II (1-5 CR.)** Expands upon the topics of Algebra I including rational expressions, radicals, and exponents, quadratic equations, systems of equations, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Reading Level Requisite ENG 4. Requisite: Test Credit of MTH 3T/4T/ DVS and a "C" in high school Algebra I or II; or MTH 3 completed. Credits not applicable toward graduation. Variable hours per week.

**MTH 6 DEVELOPMENTAL GEOMETRY (1-5 CR.)**

Covers topics in Euclidean geometry including similarity and congruency, plane and solid figures, right triangles, parallel and perpendicular lines, constructions, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Reading Level Requisite ENG 4. Requisite: Test Credit of MTH 3T/4T/DVS; or MTH 3 completed and a "C" in high school Algebra I or Algebra II. Credits not applicable toward graduation. Variable hours per week.

**MTH 50 MATHEMATICS FOR TEACHER ENTRANCE EXAMS (1-2 CR.)**

Provides participants with review and practicer for the mathematics portion of the licensure examination required of all beginning teachers in Virginia. Test-taking strategies are emphasized throughout. Prerequisite: MTH 2 or equivalent. Lecture 1-2 hours per week.

**MTH 105-106 SURVEY OF TECHNICAL MATHEMATICS I-II (2 CR.)(2 CR.)**

Reviews arithmetic and introduces measurement, basic algebra, plane and solid geometry, and trigonometry. Reading Level Requisite ENG 4. Requisite for MTH 105: Test Credit of MTH 2T/3T/4T/DVS or MTH 3 completed. Lecture 2 hours per week. Prerequisite for MTH 106 is MTH 105.

**MTH 126 MATHEMATICS FOR ALLIED HEALTH (2 CR.)**

Teaches scientific notation, precision and accuracy, decimals and percents, ratio and proportion, variation, simple equations, techniques of graphing, use of charts and tables, logarithms, and the metric system. Reading Level Requisite ENG 5. Requisite: Credit of MTH 3T/4T/DVS or MTH 3 completed and one unit of algebra with "C" or equivalent. Lecture 3 hours per week.

**MTH 141-142 BUSINESS MATHEMATICS I-II (3 CR.) (3 CR.)**

Provides instruction, review, and drill in percentages, cash and trade discounts, markup, payroll, sales, property and other taxes, simple and compound interest, bank discounts, loans, investments, and annuities. Reading Level Requisite ENG 4. Requisite: Test Credit of MTH 2T/3T/4T/DVS or MTH 2, 3, or 4 completed and one unit of high school mathematics with a "C" or equivalent. Lecture 3 hours per week Prerequisite for MTH 142 is MTH 141.

**MTH 146 INTRODUCTION TO ELEMENTARY STATISTICS (3 CR.)**

Introduces the methods of statistics including sampling from normally distributed populations, estimation, regression, testing of hypotheses, point and interval estimation methods. Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 3T and a "C" in Algebra I. Lecture 3 hours per week.

**MTH 151 MATHEMATICS FOR THE LIBERAL ARTS I (3 CR.)**

Presents topics in sets, logic, numeration systems, geometric systems, and elementary computer concepts. Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 4T and a "C" in high school Algebra II and Geometry. Lecture 3 hours per week.

**MTH 152 MATHEMATICS FOR THE LIBERAL ARTS II (3 CR.)**

Presents topics in functions, combinatorics, probability, statistics and algebraic systems. Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 4T/DVS and a "C" in high school Algebra II and Geometry or equivalent. Lecture 3 hours per week. May be taken before MTH 151.

**MTH 157 ELEMENTARY STATISTICS (3 CR.)**

Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis. (Credit will not be awarded for both MTH 157 and MTH 240.) Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 4T/DVS and "C" in Algebra II and Geometry. Lecture 3 hours per week.

**MTH 163 PRECALCULUS I (3 CR.)**

Presents college algebra, matrices, and algebraic, exponential, and logarithmic functions. Lecture 3 hours per week. Credit will not be awarded for both MTH 163 and 166. Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 4T/DVS with a "C" in Algebra II and Geometry or equivalent.

**MTH 164 PRECALCULUS II (3 CR.)**

Presents trigonometry, analytic geometry, and sequences and series. Prerequisite: MTH 163 or equivalent. Lecture 3 hours per week. Credit will not be awarded for both MTH 164 and 168. Reading Level Requisite ENG 111. See page 73.

**MTH 271 APPLIED CALCULUS (3 CR.)**

Presents limits, continuity, differentiation of algebraic and transcendental functions with applications, and an introduction to integration. Prerequisite: MTH 163 or MTH 166 or equivalent. (Credit will not be awarded for both MTH 270 and MTH 271.) Lecture 3 hours per week.

**MTH 273 CALCULUS I (4 CR.)**

Presents topics in differential calculus of one variable including the theory of limits, derivatives, differentials, definite and indefinite integrals and applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Reading Level Requisite ENG 111. Requisite: Test Credit of MTH 4T/DVS and a grade of "C" in four units of high school mathematics including Algebra I, Algebra II, Geometry and Trigonometry or equivalent. Lecture 4 hours per week. Credit will not be awarded for more than one of MTH 173, 175, or 273.

**MTH 274 CALCULUS II (4 CR.)**

Covers vectors in three dimensions, definite integrals, methods of integration, indeterminate forms, partial differentiation, and multiple integrals. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 273 or equivalent. Lecture 4 hours per week. Credit will not be awarded for more than one of MTH 174, 176, and 274. Reading Level Requisite ENG 111. See page 73.

**MECHANICAL ENGINEERING TECHNOLOGY (MEC)****MEC 113 MATERIALS AND PROCESSES OF INDUSTRY (4 CR.)**

Studies industrial/engineering materials and accompanying industrial processes. Investigates nature of materials structure and properties from a design standpoint, leading to a more intelligent selection of a materials, as well as the processes themselves to ensure a logical and systematic procedure for selection of materials. Reading Level Requisite ENG 4. Lecture 4 hours per week.

**MEC 118 AUTOMATED MANUFACTURING TECHNOLOGY (3 CR.)**

Studies numerical control systems. Includes application of numerical control to standard machine tools, numerical control systems, NC coordinate systems, APT systems, two-dimensional machine process, three-dimensional machine process, flexible manufacturing role of robotics in automated manufacturing. Reading Level Requisite ENG 5. Lecture 2 hours. Laboratory 3 hours. Total 4 hours per week.

**MEC 120 PRINCIPLES OF MACHINE TECHNOLOGY (2-3 CR.)** Studies fundamental machine operations and practices, including layout, measuring devices, hand tools, drilling, reaming, turning between centers, cutting tapers and threads, and milling; fabrication of mechanical parts on drill press, lathe and mill. Lecture 2 hours. Laboratory 0-3 hours. Total 5 hours per week.

**MEC 155 MECHANISMS (2 CR.)** Studies the purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. Focuses on motions, linkages, velocities, and acceleration of points within a link mechanism; layout method for designing cams and gear train. Requires preparation of weekly laboratory reports. Reading Level Requisite ENG 4. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**MEC 266 FLUID MECHANISMS (3-4 CR.)** Teaches theory of hydraulic and pneumatic circuits including motors, controls, actuators, valves, plumbing, accumulators, reservoirs, pumps, compressors, and filters. Lecture 3-4 hours per week.

## **MEDICAL LABORATORY**

**MDL 105 PHLEBOTOMY (3-4 CR.)** Introduces basic medical terminology, anatomy, physiology, components of health care delivery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions. Reading Level Requisite ENG 5. Lecture 2 hours. Laboratory 3-6 hours. Total 5-8 hours per week.

**MDL 106 CLINICAL PHLEBOTOMY (4 CR.)** Focuses on obtaining blood specimens, processing specimens, managing assignments, assisting with and/or performing specified tests, performing clerical duties and maintaining professional communication. Provides supervised learning in college laboratory/and or cooperating agencies. Reading Level Requisite ENG 5. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

## **MINING (MIN)**

**MIN 131-132 MINE ELECTRICITY I-II (4 CR.)(4 CR.)** Studies principles of electricity in both AC and DC circuits. Presents permissible mine machinery and legal requirements of state and federal agencies pertaining to underground electrical work. Teaches maintenance of permissible electrical equipment, transformer connections, and electrical control safety devices applicable to mine electrical distribution and utilization systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**MIN 228 MINE FOREMAN AND VENTILATION TRAINING (4 CR.)** Applies state and federal codes and practices to ventilation, roof control, blasting, electricity, rescue and recovery operation, evaluation and control of mine gases and environment. Examines preparatory work for public examination for mine foreman certification. Teaches mine ventilation theory and practice, mine drainage and pumping, mathematical calculation, mine mapping symbols and procedures. Reading Level Requisite ENG 4. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**MIN 287 FEDERALLY MANDATED TRAINING (2 CR.)** Federally mandated training consisting of 32 hours in classroom and 8 hours on job site (student responsibility) to qualify student to work at an underground mine site.

**MIN 288 FEDERALLY MANDATED TRAINING (2 CR.)** Federally mandated training consisting of 16 hours in classroom and 8 hours on job site (student responsibility) to qualify student to work at a surface mine and surface installation.

## **MUSIC (MUS)**

**MUS 121-122 MUSIC APPRECIATION I-II (3 CR.)(3 CR.)** Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences. Reading Level Requisite ENG 111. Lecture 3 hours per week.

## **NATURAL SCIENCE (NAS)**

**NAS 106 CONSERVATION OF NATURAL RESOURCES (3 CR.)** Describes the management of natural resources, balance of nature, and the human impact on the environment. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours per week.

**NAS 125 METEOROLOGY (4 CR.)** Presents a non-technical survey of fundamentals meteorology. Focuses on the effects of weather and climate on humans and their activities. Serves for endorsement or recertification of earth science teachers. Reading Level Requisite ENG 111. Lecture 3 hours per week. Recitation and laboratory 2 hours per week. Total 5 hours per week.

**NAS 131-132 ASTRONOMY I-II (4 CR.)(4 CR.)** Studies the major and minor bodies of the solar system, stars and nebulae of the milky way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Reading Level Requisite ENG 111. Lecture 3 hours per week. Recitation and the laboratory 3 hours per week. Total 6 hours per week.

**NAS 171-172 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 CR.)(4 CR.)** Presents the human organ systems and their functions as they relate to allied health science. Lecture 3 hours per week. Recitation and laboratory 3 hours per week. Total 6 hours per week.

**NAS 215 MAN IN HIS ENVIRONMENT (6 CR.)** Analyzes ecological and technological forces at work in today's world including air and water pollution, pesticides, and land use. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 4 hours per week. Recitation and laboratory 6 hours per week. Total 10 hours per week.

**NAS 216 MAN AND ENERGY (6 CR.)** Presents an overview of energy resources, utilization and conservation. May involve field trips, experimental components, and the production of audiovisual teaching units for use in secondary level classrooms. Serves as a recertification course for secondary school teachers. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 4 hours per week. Recitation and laboratory 6 hours per week. Total 10 hours per week.

## **NURSING (NUR)**

*Prerequisite for all courses in this department is current enrollment in the Associate Degree Nursing Plan.*

**NUR 111 NURSING (7 CR.)** Introduces nursing principles including concepts of health and wellness and the nursing process. Develops nursing skills to meet the biopsychosocial needs of individuals across the life-span. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Lecture 4 hours. Laboratory 9 hours. Total 13 hours per week.

**NUR 112 NURSING II (8 CR.)** Prerequisites: NUR 111, NUR 136, MTH 126, BIO 141. Focuses on the nursing care of individuals and/or families experiencing changes along the health/illness continuum that are common, well-defined, and have predictable outcomes. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Lecture 4 hours. Laboratory 12 hours. Total 16 hours per week.

**NUR 115 LPN TRANSITION (5 CR.)** Introduces the role of the registered nurse through concepts and skill development in the discipline of professional nursing. This course serves as a bridge course for licensed practical nurses and is based upon individualized articulation agreement, mobility exams, or other assessment criteria as they relate to local programs and service areas. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Lecture 1-7 hours. Laboratory 0-18 hours. Total 2-19 hours per week. *(This course has been approved by the Vice Chancellor as an exception to the variable credit policy.)*

**NUR 136 PRINCIPLES OF PHARMACOLOGY I (1 CR.)** Teaches principles of medication administration which include dosage calculations, major drug classifications, drug legislation, legal aspects of medication administration, drug action on specific body systems, and basic computer applications. Lecture 1 hour per week.

**NUR 137 PRINCIPLES OF PHARMACOLOGY II (1 CR.)** Prerequisites NUR 111, NUR 136, MTH 126, BIO 141. Teaches principles of medication administration which include dosage calculations, major drug classifications, drug legislation, legal aspects of medication administration, drug action on specific body systems, and basic computer applications. Lecture 1 hour per week.

**NUR 211 SECOND LEVEL NURSING (8 CR.)** Prerequisites NUR 111, NUR 136, NUR 137, NUR 226, MTH 126, BIO 141, BIO 142. Emphasized nursing care of individuals, families, and/or groups in various stages of development who are experiencing alterations and related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Lecture 4 hours per week. Laboratory 12 hours per week. Total 16 hours per week.

**NUR 212 SECOND LEVEL NURSING II (8 CR.)** Prerequisites NUR 111, NUR 112, NUR 136, NUR 137, NUR 211, NUR 236, MTH 126, BIO 141, BIO 142, PSY 231. Emphasizes nursing care of individuals, families, and/or groups in various stages of development who are experiencing alterations related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experience in college nursing laboratories and/or cooperating agencies. Lecture 4 hours per week. Laboratory 12 hours per week. Total 16 hours per week.

**NUR 226 HEALTHASSESSMENT (3 CR.)** Prerequisites NUR 111, NUR 112, NUR 136, NUR 137, BIO 141, BIO 142. Teaches a systematic approach to obtaining a health history and performing a physical assessment. Lecture 2 hours per week. Laboratory 3 hours per week. Total 5 hours per week.

**NUR 236 PRINCIPLES OF PHARMACOLOGY III (1 CR.)** Prerequisites NUR 111, NUR 112, NUR 136, NUR 137, MTH 126, BIO 141, BIO 142. Teaches principles of medication administration which include dosage calculations major drug classifications, drug legislation, legal aspects of medication administration, and drug action on specific body systems. Lecture 1 hour per week.

**NUR 237 PRINCIPLES OF PHARMACOLOGY IV (1 CR.)** Prerequisites NUR 111, NUR 112, NUR 136, NUR 137, NUR 211, NUR 236, MTH 126, BIO 141, BIO 142. Teaches principles of medication administration which include dosage calculations, major drug classification, drug legislation, legal aspects of medication administration, and drug action on specific body systems. Lecture 1 hour per week.

**NUR 254 DIMENSIONS OF PROFESSIONAL NURSING (2 CR.)** Prerequisites NUR 111, NUR 112, NUR 131, NUR 136, NUR 141, NUR 211, NUR 236, & BIO 142. Explores the role of the professional nurse. Emphasized nursing organizations, legal and ethical implications, and addresses trends in management and organizational skills. Explores group dynamics, relationships, conflicts, and leadership styles. Lecture 2 hours per week.

## **PHILOSOPHY (PHI)**

**PHI 101-102 INTRODUCTION TO PHILOSOPHY I-II (3 CR.)(3 CR.)** Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**PHI 211-212 THE HISTORY OF WESTERN PHILOSOPHY I-II (3 CR.)(3 CR.)** Provides historical survey of representative philosophers from the pre-Socratics to the present. Introduces the student to development of philosophical thought through selected readings of original works and appropriate critical materials. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week. May be taken out of sequence.

**PHI 220 ETHICS (3 CR.)** Provides a systematic study of representative ethical systems. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

## PHOTOGRAPHY (PHT)

### **PHT 101-102 PHOTOGRAPHY I-II (3 CR.)(3 CR.)**

Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Reading Level Requisite ENG 4. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week. Must be taken in sequence.

### **PHT 107 NATURE PHOTOGRAPHY (3 CR.)**

Teaches fundamentals of 35mm color slide photography of natural objects. Emphasizes selection of equipment and film, compositional theory, and the flash photography formula. Requires outside shooting and lab work. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

### **PHT 211-212 COLOR PHOTOGRAPHY I-II (3 CR.)(3 CR.)**

Introduces theory, materials, and processes of modern color images. Includes additive and subtractive theory, color filtration, and negative and positive printing techniques. Prerequisite PHT 101 or equivalent. Requires outside shooting and lab work. Reading Level Requisite ENG 4. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week. Must be taken in sequence.

## PHYSICAL EDUCATION (PED)

### **PED 101-102 FUNDAMENTALS OF PHYSICAL ACTIVITY (1-2 CR.) (1-2 CR.)**

Presents principles underlying the components of physical fitness. Utilizes conditioning activities involving cardiovascular strength and endurance, respiratory efficiency, muscular strength, and flexibility. May include fitness assessment, nutrition and weight control information, and concepts of wellness. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 103-104 AEROBIC FITNESS I-II (1-2 CR.) (1-2 CR.)**

Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 109 YOGA (1-2 CR.)**

Focuses on the forms of yoga training emphasizing flexibility. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 111-112 WEIGHT TRAINING I-II (1-2 CR.) (1-2 CR.)**

Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 121-122 RACKETBALL I-II (1-2 CR.)(1-2 CR.)**

Teaches racketball skills and strategies for team and individual play. Includes terminology, scoring, etiquette, equipment selection, and safety. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 123-124 TENNIS I-II (1-2 CR.)(1-2 CR.)**

Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 125 BADMINTON (1-2 CR.)**

Introduces skills, techniques, strategies, rules, and scoring. Reading Level Requisite ENG 4. Variable hours per week.

**PED 126 ARCHERY (1-2 CR.)** Teaches skills and techniques of target archery. Focuses on use and maintenance of equipment, terminology, and safety. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 133-134 GOLF I-II (1-2 CR.)(1-2 CR.)**

Teaches basic skills of golf, rules, etiquette, scoring, terminology, equipment selection and use, and strategy. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 135-136 BOWLING I-II (1-2 CR.)(1-2 CR.)**

Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 154 VOLLEYBALL (1-2 CR.)**

Introduces skills, techniques, strategies, rules, and scoring. Reading Level Requisite ENG 4. Variable hours per week.

### **PED 155 WALLYBALL (1-2 CR.)**

Focuses on skills, techniques, strategies, rules and scoring. Wallyball is volleyball played on a racquetball court. Reading Level Requisite ENG 4. Variable hours per week.

## PHYSICS (PHY)

### **PHY 201-202 GENERAL COLLEGE PHYSICS I-II (4 CR.)(4 CR.)**

Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Prerequisite MTH 164 or equivalent. Prerequisite for PHY 202 is 201. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## POLITICAL SCIENCE (PLS)

### **PLS 135 AMERICAN NATIONAL POLITICS (3 CR.)**

Teaches political institutions and processes of the national government of the United States, focuses on the Congress, presidency, and the courts, and on their interrelationships. Gives attention to public opinion, suffrage, elections, political parties, interest groups, civil rights, domestic policy, and foreign relations. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week.

### **PLS 211-212 U.S. GOVERNMENT I-II (3 CR.)(3 CR.)**

Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

## PRACTICAL NURSING (PNE)

*Prerequisite for all courses in this department is current enrollment in the Practical Nursing Plan.*

### **PNE 130 MATERNITY NURSING (4 CR.)**

Teaches knowledge, understanding, and nursing skills related to the needs of women and other family members during all phases of childbearing. Presents abnormal conditions of pregnancy. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

### **PNE 145 TRENDS IN PRACTICAL NURSING (1 CR.)**

Studies the role of the Licensed Practical Nurse. Covers legal aspects, organizations, and opportunities in practical nursing. Assists students in preparation for employment. Lecture 1 hour per week.

**PNE 146 FUNDAMENTALS OF PRACTICAL NURSING (6 CR)** Introduces students to practical nursing history, legal and ethical aspects, and current trends. Teaches nursing knowledge and skills with emphasis on meeting basic patient needs. Utilizes nursing process. Provides learning experiences through classroom instruction, laboratory practices, and supervised clinical experience. Lecture 2 hours. Laboratory 12 hours. Total 14 hours per week.

**PNE 151 MEDICAL-SURGICAL NURSING I (4 CR.)** Studies etiology, symptoms, prescribed treatment, and experiences in the nursing care of patients with selected disorders. Selects learning experiences to correlate related patient care with classroom instruction whenever possible. Provides observational experiences when available. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**PNE 152 MEDICAL-SURGICAL NURSING II (4 CR.)** Studies etiology, symptoms, prescribed treatment, and experience in the nursing care of patients with selected disorders. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**PNE 155 BODY STRUCTURE AND FUNCTION (3 CR.)** Studies the structure and function of the body. Lecture 3 hours per week.

**PNE 157 PEDIATRICS (4 CR.)** Teaches skills related to the needs and care of the newborn, well and sick children, and other family members. Discusses abnormal conditions of infants and children of all ages. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**PNE 158 MENTAL HEALTH AND PSYCHIATRIC NURSING (1 CR.)** Recognizes emotional needs of patients. Provides knowledge of the role that emotions play. Enables students to understand their own behavior as well as patient behavior. Lecture 1 hour per week.

**PNE 173 PHARMACOLOGY FOR PRACTICAL NURSES (1 CR.)** Studies history, classification, sources, effects, uses and legalities of drugs. Teaches problem solving skills used in medication administrations. Emphasizes major drug classes and specific agents within each class. Lecture 1 hour per week.

**PNE 174 APPLIED PHARMACOLOGY FOR PRACTICAL NURSES (1 CR.)** Applies problem solving skills in preparing and administering medications. Laboratory 3 hours. Total 3 hours per week.

**PNE 181-182 CLINICAL EXPERIENCE I-II ( 5/6 CR.)** Provides guided nursing experiences in the hospital setting. Practices skills and applies principles of nursing in basic areas. Includes supervision in administration of medicines. Encourages students to develop basic skills in analyzing patient needs and making nursing decisions. Laboratory 15-18 hours per week.

## **POLYSOMNOGRAPHY (PSG)**

**PSG 101 POLYSOMNOGRAPHY I (3 CR.)** Surveys the dynamics of normal and abnormal human sleep and the practice of sleep diagnosis and treatment. Studies methods of acquisition, diagnosis, and treatment of sleep disorders. Includes practice in the use of polysomnographic equipment. Lecture 3 hours. Total 3 hours per week.

**PSG 102 POLYSOMNOGRAPHY RECORDEVALUATION (3 CR.)** Presents the general principles of analyzing and scoring polysomnographic records. Studies sleep staging, recognition and analysis of various abnormal respiratory and neurophysiologic events, and recognition and elimination of artifact. Includes scoring and analyzing raw data for the purpose of generating full reports. Lecture 3 hours. Total 3 hours per week.

## **PSYCHOLOGY (PSY)**

**PSY 120 HUMAN RELATIONS (3 CR.)** Introduces the theory and practice of effective human relations. Increases understanding of self and others and interpersonal skills needed to be a competent and cooperative communicator. Reading Level Requisite ENG 5. Writing level requisite ENG 3. Lecture 3 hours per week.

**PSY 200 PRINCIPLES OF PSYCHOLOGY (3 CR.)** Surveys the basic concepts of psychology. Covers the scientific study of behavior, behavioral research methods and analysis, and theoretical interpretations. Includes topics such as: physiological mechanisms, sensation/perception, motivation, learning, personality, psychopathology, therapy, and social psychology. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**PSY 215 ABNORMAL PSYCHOLOGY (3 CR.)** Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Prerequisite PSY 201 or PSY 200. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**PSY 216 SOCIAL PSYCHOLOGY (3 CR.)** Examines individuals in social contexts, their social roles, group processes and intergroup relations. Includes topics such as small group behavior, social behavior, social cognition, conformity, attitudes, and motivation. Prerequisite PSY 200 or 201. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week. This course is also approved for offering as SOC.

**PSY 231-232 LIFE SPAN HUMAN DEVELOPMENT I-II (3 CR.) (3 CR.)** Investigates human behavior through the life cycle. Describes physical, cognitive, and psychosocial aspects of human development from conception to death. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week. May be taken out of sequence.

**PSY 235 CHILD PSYCHOLOGY (3 CR.)** Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

## **REAL ESTATE (REA)**

**REA 100 PRINCIPLES OF REAL ESTATE (4 CR.)** Examines practical applications of real estate principles. Includes a study of titles, estates, land descriptions, contracts, legal instruments, financing and management of real estate. Reading Level Requisite ENG 5. Lecture 4 hours per week.

**REA 215 REAL ESTATE BROKERAGE (3 CR.)**

Considers administrative principles and practices of real estate brokerage, financial control and marketing of real property. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**REA 216 REAL ESTATE APPRAISAL (3 CR.)**

Explores fundamentals of real estate valuation. Introduces the Uniform Standards of Professional Appraisal Practice and the Uniform Residential Appraisal Report form. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**REA 217 REAL ESTATE FINANCE (3 CR.)**

Presents principles and practices of financing real estate. Analyzes various types of mortgage note contracts and mortgage and deed of trust instruments. Covers underwriting of conventional and government insured and guaranteed loans. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**REA 218 APPRAISING THE SINGLE FAMILY RESIDENCE (2-3 CR.)**

Promotes an understanding and working knowledge of procedures and techniques used to estimate market value of vacant residential land and improved single family residential properties. Emphasizes the proper application of valuation methods and techniques to residential properties and extraction of data from the market for use in sales comparison, cost and income capitalization approaches to value. Reading Level Requisite ENG 5. Lecture 2-3 hours per week.

**REA 220 INCOME PROPERTY VALUATION I (3 CR.)**

Familiarizes the student with the techniques that are utilized to perform the appraisal of more complex income producing properties. Focuses on income and expense forecasting, appropriate techniques for determining capitalization rates, and discounted cash flow method. Includes valuation of complex commercial properties such as apartment complexes, office buildings, shopping centers, industrial properties, hotels, and mixed use complexes. Prerequisite REA 216, or equivalent. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**REA 225 REAL PROPERTY MANAGEMENT (3 CR.)**

Introduces the field of property management. Focuses on the principles of tenant selection and retention, financial management, and building maintenance. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**REA 238 PROFESSIONAL APPRAISAL STANDARDS (1 CR.)**

Examines the provisions and standard rules that govern professional appraisal practices. Covers the "Binding Requirements" and "The Specific Appraisal Guidelines" published by *The Appraisal Foundation*. Reading Level Requisite ENG 5. Lecture 1 hour per week.

**REA 245 REAL ESTATE LAW (3 CR.)**

Studies real estate law, including rights incidental to property ownership and management, agency contract and application to real estate transfer covenanting probate proceedings, trust transactions, and tax implications. Reading Level Requisite ENG 5. Lecture 3 hours per week. May be taken out of sequence.

**REA 246 REAL ESTATE ECONOMICS (3 CR.)**

Examines the nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residential market trends, rural property and special purpose property trends. Reading Level Requisite ENG 5. Lecture 3 hours per week.

**RELIGION****REL 231-232 RELIGIONS OF THE WORLD I-II (3 CR.) (3 CR.)**

Studies religions of the world with attention to origin, history, and doctrine. Reading Level Requisite ENG 111. Lecture 3 hours per week.

**RESPIRATORY THERAPY (RTH)**

*Prerequisite for all courses in this department is current enrollment in the Respiratory Therapy Plan.*

**RTH 102 INTEGRATED SCIENCES FOR RESPIRATORY CARE (3 CR.)**

Integrates the concepts of mathematics, chemistry, physics, microbiology, and computer technology as these sciences apply to the practices of respiratory care. Lecture 3 hours per week.

**RTH 110 FUNDAMENTAL THEORY AND PROCEDURES FOR RESPIRATORY CARE (4 CR.)**

Focuses on the development of basic respiratory care skills necessary to enter the hospital environment. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

**RTH 111 ANATOMY & PHYSIOLOGY OF THE CARDIOPULMONARY SYSTEM (3 CR.)**

Concentrates on anatomy and physiology of the cardiopulmonary system. Lecture 3 hours per week.

**RTH 112 PATHOLOGY OF THE CARDIOPULMONARY SYSTEM (3 CR.)**

Presents pathophysiology of medical and surgical diseases with emphasis upon diseases of cardiopulmonary system. Lecture 3 hours per week.

**RTH 121 CARDIOPULMONARY SCIENCE I (3 CR.)**

Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal and neuromuscular physiology and pathophysiology. Lecture 3 hours per week.

**RTH 131-132 RESPIRATORY CARE THEORY AND PROCEDURES I-II (4 CR.) (4 CR.)**

Presents theory of equipment and procedures used for patients requiring general and critical cardiopulmonary care. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RTH 135 DIAGNOSTIC AND THERAPEUTIC PROCEDURES I (2 CR.)**

Focuses on purpose, implementation and evaluation of equipment, and procedures used in the diagnosis and therapeutic management of patients with cardiopulmonary disease. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**RTH 145 PHARMACOLOGY FOR RESPIRATORY CARE I (2 CR.)**

Introduces students to pharmacologic agents used in cardiopulmonary care. Lecture 2 hours per week.

**RTH 151 FUNDAMENTAL CLINICAL PROCEDURES I (4 CR.)**

Offers clinical instruction in basic patient care practices. Lecture 2 hour. Laboratory 6 hours. Total 8 hours per week.

**RTH 152 FUNDAMENTAL CLINICAL PROCEDURES II (4 CR.)**

Offers clinical instruction in basic patient care practices. Lecture 2 hour. Laboratory 6 hours. Total 8 hours per week.

**RTH 215 PULMONARY REHABILITATION (1 CR.)**

Focuses on purpose and implementation of comprehensive pulmonary rehabilitation program. Lecture 1 hour per week.

**RTH 222 CARDIOPULMONARY SCIENCE II (3 CR.)**

Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal, and neuromuscular physiology, and pathophysiology. Lecture 3 hours per week.

**RTH 226 THEORY OF NEONATAL AND PEDIATRIC**

**RESPIRATORY CARE (2 CR.)** Focuses on cardiopulmonary physiology and pathology of the newborn and pediatric patient. Lecture 2 hours per week.

**RTH 253 ADVANCED CLINICAL PROCEDURES III**

**(3-4 CR.)** Offers clinical instruction in advanced patient care practices. Clinical 15-20 hours per week.

**RTH 254 ADVANCED CLINICAL PROCEDURES IV**

**(3-4 CR.)** Offers clinical instruction in advanced patient care practices. Clinical 15-20 hours per week.

**SAFETY (SAF)****SAF 120 SAFETY & HEALTH STANDARDS: REGULATIONS AND CODES (3 CR.)**

Teaches development of safety standards, the Occupational Safety and Health Act (OSHA), its rules and regulations; penalties for noncompliance, and methods of compliance. Includes an examination of Government Regulatory Codes and appraisal of consensus, advisory, and proprietary standards. Lecture 3 hours per week.

**SAF 126 PRINCIPLES OF INDUSTRIAL SAFETY (3 CR.)**

Teaches principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion. Lecture 3 hours per week.

**SAF 127 INDUSTRIAL SAFETY (2 CR.)**

Provides basic understanding of safety and health in an industrial situation. Includes hazardous materials, substances, conditions, activities and habits as well as the prescribed methods and equipment needed for the apprentice to protect himself/herself and others. Lecture 2 hours per week.

**SAF 246 HAZARDOUS CHEMICALS, MATERIALS, AND WASTE IN THE WORKPLACE (3 CR.)**

Introduces the rules and regulations governing use, exposure to, and disposal of hazardous chemicals, materials and waste by-products. Discusses OSHA "Right to Know Laws," EPA and RCRA regulations. Provides the techniques to interpret and understand the code of Federal Regulations. Emphasis on management mandates, strategies, and options to comply with these regulations. Lecture 3 hours per week.

**SCIENCE TECHNOLOGY (SCT)****SCT 111-112 INTRODUCTION TO ENVIRONMENTAL AND SCIENCE TECHNOLOGY I-II (4 CR.)(4 CR.)**

Introduces the basic sciences which describe our physical environment. Includes the fundamentals of geology, meteorology, physics, chemistry, and biology. Describes basic scientific principles and relates them to natural phenomena and the activities of man. Emphasizes field experiences including techniques and data gathering. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week. Must be taken in sequence.

**SCT 213 SCIENCE TECHNOLOGY TECHNIQUES**

**III (5 CR.)** Involves more advanced and specialized apparatus and techniques than are employed in SCT 102. Focuses on the areas that are of particular interest to the student and/or are needed by the area employers. Emphasizes the underlying principles involved and the modification of techniques for special purposes. Prerequisite SCT 112. Lecture 3 hours. Laboratory 5 hours. Total 8 hours per week.

**SOCIAL SCIENCE (SSC)****SSC 100 THE INDIVIDUAL AND HIS/HER WORLD**

**(4 CR.)** Relates the individual to his/her total environment. Offers four course units: (1) the individual and his/her psychological and social environment; (2) the individual and his/her political environment; (3) the individual and his/her economic environment; and (4) the individual and ecology. Students may enroll at the beginning of any unit, none of which are prerequisite to the other. Lecture 4 hours per week.

**SOCIOLOGY (SOC)****SOC 200 PRINCIPLES OF SOCIOLOGY (3 CR.)**

Introduces fundamentals of social life. Presents significant research and theory in areas such as culture, social structure, socialization, deviance, social stratification, and social institutions. Reading Level Requisite ENG 111. Writing level requisite ENG 111.

**SOC 205 RURAL SOCIOLOGY (3 CR.)**

Investigates American rural society and culture, its major institutions, and the contemporary conditions influencing rural life. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**SOC 215 SOCIOLOGY OF THE FAMILY (3 CR.)**

Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife interaction, single parent families, alternative life-styles. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**SOC 268 SOCIAL PROBLEMS (3 CR.)**

Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**SPANISH (SPA)****SPA 101-102 BEGINNING SPANISH-II (4 CR.)(4 CR.)**

Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. May include an additional hour of oral drill and practice per week. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 4 hours per week.

**SPEECH & DRAMA (SPD)****SPD 100 PRINCIPLES OF PUBLIC SPEAKING (3 CR.)**

Applies theory and principles of public address with emphasis on preparation and delivery. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**SPD 105 ORAL COMMUNICATION (3 CR.)** Studies effective communication with emphasis on speaking and listening. Writing level requisite ENG 111. Lecture 3 hours per week.

**SPD 110 INTRODUCTION TO SPEECH COMMUNICATION (3 CR.)** Examines the elements affecting speech communication at the individual, small group, and public communication levels with emphasis on practice of communication at each level. Lecture 3 hours per week.

**SPD 116 SPEECH WORKSHOP (1-6 CR.)** Enables work in competitive speech activities such as debate, oratory, impromptu speaking, prose and poetry reading, and rhetorical criticism. May be repeated for credit. Variable hours per week.

**SPD 130 INTRODUCTION TO THE THEATRE (3 CR.)** Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Reading Level Requisite ENG 111. Writing level requisite ENG 3. Lecture 3 hours per week.

**SPD 131-132 ACTING I-II (3 CR.)(3 CR.)** Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Reading Level Requisite ENG 4. Writing level requisite ENG 3. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week. Must be taken in sequence.

**SPD 151-152 FILM APPRECIATION I-II (3 CR.)(3 CR.)** Aims to increase the student's knowledge and enjoyment of film and film criticism through discussion and viewing of movies. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week. Must be taken in sequence.

**SPD 250 THE ART OF THE FILM (3 CR.)** Introduces the art of the film through a survey of film history; viewing, discussion, and analysis of selected films. Studies film techniques such as composition, shot sequence, lighting, visual symbolism, sound effects, and editing. Reading Level Requisite ENG 111. Writing level requisite ENG 111. Lecture 3 hours per week.

**SPD 266 OUTDOOR DRAMA (3 CR.)** Enables students to study production techniques through participation as actors or technicians in outdoor drama. Prerequisite: divisional approval. Variable hours per week.

#### **STUDENT DEVELOPMENT (STD)**

**SDV 100 ORIENTATION (1 CR.)** Assists students in transition to college. Provides overviews of college policies, procedures, curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and math placement testing. Strongly recommended for beginning students. **REQUIRED FOR GRADUATION.** Reading Level Requisite ENG 4. Lecture 1 hour per week.

**SDV 101 ORIENTATION TO EDUCATION (1 CR.)** Introduces students to the skills which are necessary to achieve their academic goals, to the services offered at the college and to the discipline in which they are enrolled. Covers topics such as services offered at the college including the learning resources center, counseling, and advising; listening, test taking, and study skills; and topical areas which are applicable to their particular discipline. Lecture 1 hour per week.

**SDV 106 PREPARATION FOR EMPLOYMENT (1 CR.)** Provides experience in resume writing, preparation of applications, letters of application, and successfully preparing for completing the job interview. Assists students in identifying their marketable skills and aptitudes. Develops strategies for successful employment search. Assists students in understanding effective human relations techniques and communication skills in job search. Reading Level Requisite ENG 4. Lecture 1 hour per week.

**SDV 107 CAREER EDUCATION (2 CR.)** Surveys career options available to students. Stresses career development and assists in the understanding of self in the world of work. Assists students in applying decision-making to career choice. May be substituted for STD 100. Reading Level Requisite ENG 4. Lecture 2 hours per week.

**SDV 108 COLLEGE SURVIVAL SKILLS (1-3 CR.)** Provides an orientation to the college. Introduces study skills, career and life planning. Offers an opportunity to engage in activities aimed at self-discovery. Emphasizes development of "Coping Skills" such as listening, interpersonal relations, competence, and improved self-concept. Recommended for students enrolled in developmental courses. Lecture 1-3 hours per week.

**SDV 109 STUDENT LEADERSHIP DEVELOPMENT (1 CR.)** Provides opportunities for students to learn leadership theory and skills for application in campus organizations, committees and groups. Lecture 1 hour per week.

#### **TELECOMMUNICATIONS (TEL)**

**TEL 150 INTERNETWORKING I (3-4 CR.)** Introduces the functions of each layer of the ISO/OSI reference model, data link and network addresses, data encapsulation, different classes of IP addresses and subnetting and the functions of the TCP/IP network-layer protocols. Lecture 2-3 hours. Lab 2-3 hours. Total 4-6 hours per week.

**TEL 151 INTERNETWORKING II (3-4 CR.)** Teaches features of the Cisco IOS software, including log in, context-sensitive help, command history and editing, loading software, configuring and verifying IP addresses, preparing the initial configuration of a router, and adding routing protocols to the router configuration. Prerequisite: TEL 150. Lecture 2-3 hours. Lab 2-3 hours. Total 4-6 hours per week.

**TEL 250 INTERNETWORKING III (3-4 CR.)** Studies the advantages of LAN segmentation using bridges, routers, and switches. Fast Ethernet configuring access lists. Covers Spanning Tree Protocol and Virtual LANs. Prerequisite: TEL 151. Lecture 2-3 hours. Lab 2-3 hours. Total 4-6 hours per week.

**TEL 251 INTERNETWORKING IV (3-4 CR.)** Focuses on the differences between the following WAN services: LAPB, Frame Relay, ISDN/LAP HDLC, PPP, and DDR. Prerequisite: TEL 250. Lecture 2-3 hours. Lab 2-3 hours. Total 4-6 hours per week.

## **WELDING (WEL)**

### **WEL 100 FUNDAMENTALS OF WELDING (3 CR.)**

Introduces electric and gas welding and cutting. Provides fundamental principles of joining ferrous and nonferrous metals, welding and cutting processes, equipment operation, and safety procedures with emphasis upon welding and cutting procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 110 WELDING PROCESSES (3 CR.)** Introduces types of welding, their advantages and disadvantages. Points out effects of welds on metals to be machined. Provides practice and demonstration in welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 115 ARC AND GAS WELDING (3 CR.)** Presents arc and gas welding practices. Discusses safety, general welding practices and effects of welding on metals. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 123-124 ARC WELDING I-II (3-4 CR.) (3-4 CR.)** Teaches operation of AC transformers and DC motor generator arc welding sets, welding polarities, heats and electrodes for use in joining various metal alloys by the arc welding process; deals with running beads, butt, and fillet welds in all positions. Emphasizes safety procedures. Variable hours per week.

**WEL 126 PIPE WELDING I (3 CR.)** Teaches metal arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal-fixed positions in accordance with section IX of the ASME Code. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 130 INERT GAS WELDING (3 CR.)** Introduces practical operations in the uses of inert-gas-shield arc welding. Discusses equipment, safety operations, welding practice in the various applications, manual and semiautomatic welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 141 WELDER QUALIFICATION TESTS I-II (3 CR.)** Studies techniques and practices of testing welded joints through destructive and nondestructive tests, guiding, discoloration heat test, porous examinations, tensile, hammer and free bend tests. Also studies visual, magnetic and fluorescent tests. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 145 WELDING METALLURGY (3 CR.)** Studies steel classifications, heat treatment procedures, properties of ferrous and nonferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic and fluorescent testing. Lecture 3 hours per week.

**WEL 150 WELDING DRAWING AND INTERPRETATION (2-3 CR.)** Teaches fundamentals required for successful drafting as applied to the welding industry. Includes blueprint reading, geometric principles of drafting and freehand sketching, basic principles of orthographic projection, preparation of drawings and interpretation of symbols. 2-3 hours/week. lecture/lab hours per week.

**WEL 160 SEMIAUTOMATIC WELDING PROCESSES (3 CR.)** Introduces semiautomatic welding processes with emphasis on practical application. Includes the study of filler wires, fluxes, and gases. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 195 TOPICS IN PIPEFITTING (3 CR.)** Reviews basic mathematics necessary for the pipe trade. Teaches basic methods for fabricating piping offsets, miter-turn fittings, laterals, tees, odd angle elbows from 90 degree elbows, and the use of pipe fitting tools. Lecture 3 hours per week.

**WEL 198 SEMINAR AND PROJECT IN WELDING (3 CR.)** Completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.