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# Course Descriptions

Because the College is a comprehensive community college, it offers a variety of types of courses with various purposes. Many courses are designed for transfer to four-year institutions to fulfill baccalaureate degree requirements. We usually refer to these courses as transfer courses. All courses listed in Associate of Arts degree (A.A.) or Associate in Science degree (A.S.) programs are designed to transfer. All junior and community colleges in Alabama use the same course numbering system and descriptions. As a general rule, Alabama four-year institutions accept these courses for transfer, though each institution has unique requirements.

In order to facilitate the transfer process, students, faculty, and staff have access to the Statewide Articulation Reporting System (STARS) by Internet. STARS is a computerized articulation and transfer planning system designed to inform students who attend Alabama community colleges about degree requirements, course equivalents, and other transfer information pertaining to specific majors at each state funded four-year institution. STARS is an efficient and effective way of providing students, counselors, and educators with accurate information upon which transfer decisions can be made. The STARS database, if used properly, can prevent the loss of course credit hours, can provide direction for the scheduling of course work, and can make the transition from one institution to another easier.

The College also offers courses which are designed primarily to prepare students for employment. Employment-oriented courses in Associate in Applied Science (A.A.S.), Associate in Occupational Technology (A.O.T.) and certificate programs may not transfer to some institutions. Please consult your advisor who can assist you in determining the courses and programs that meet your needs.

Another type of designation important to the College courses is that of "Degree Creditable." For a course to be degree creditable it must require a high school diploma or a GED certificate for enrollment and be taught at a level that carries certain quality assumptions. All departments which are not degree creditable are identified in the course descriptions by a star (\*) after the department code. Only with rare exceptions are these courses transferable for degree purposes.

Numbers at the right of each course title indicate lecture, lab, and credit hours, respectively. For example: 3-2-4 would indicate three hours of lecture and two hours of lab per week for four hours of credit. Course numbers beginning with a zero (0) indicate that the course is a developmental course and as such does not meet graduation requirements in certificate or degree programs. An example is ENG 099.

**Parallel Courses.** The following table is provided to help students determine which courses are designed for transfer and which are designed for A.A.S. or A.O.T. degrees or certificates. Many courses developed for A.A.S. or A.O.T. degrees or certificates are not designed for transfer and, therefore, may not be transferable to many universities. In the CIS and OAD departments selected courses may not be planned for transfer. Check course descriptions or with an advisor in these departments for these courses.

<u>Transfer</u>	<u>Occupational/Technical Parallel (Non-transfer)</u>
ENG English	COM 100 and 103
MTH Mathematics	MAH 101 and 102
BUS Accounting	ACT Accounting
ORI Orientation	ORT Orientation

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\*Not Degree Creditable

## Accounting Technology (ACT)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

### **ACT 104 Introduction to Business** 3-0-3

This course acquaints the student with American business as a dynamic process. Topics include the private enterprise system, forms of business ownership, marketing, production factors, personnel, labor, finance, and taxation. Upon completion, the student should be able to discuss and apply the basic business principles.

### **ACT 114 Introduction to Accounting Database Resources** 3-0-3

This course introduces the student to Database resources available for use with the accounting programs. Emphasis is placed on Database and Financial Accounting software packages. Upon completion, students should be able to use computerized Database software.

### **ACT 115 Introduction to Accounting Computer Resources** 3-0-3

This course introduces the student to the computer resources available for use with the accounting program. Emphasis is placed on accounting spreadsheets and financial accounting software packages. Upon completion, the student should be able to use the computer resources in the accounting program.

### **ACT 141 Basic Accounting Principles** 3-0-3

This course provides a basic theory of accounting principles and practices used by service and merchandising enterprises. Emphasis is on financial accounting, including the accounting cycle, and financial statement preparation and analysis. Upon completion, the student should be able to apply basic accounting principles and practices used by service and merchandising enterprises.

### **ACT 142 Advanced Accounting Principles** 3-0-3 PREREQUISITE: ACT 141.

This course is a continuation of ACT 141. In addition to a study of financial accounting, this course emphasizes managerial accounting, with coverage of corporations, statement analysis, introductory cost accounting, and use of accounting information for planning, control and decision making. Upon completion, the student should be able to apply the principles of managerial accounting.

### **ACT 193 Accounting Co-op** 0-6-1 PREREQUISITE: Permission of the instructor.

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

### **ACT 194 Accounting Co-op** 0-12-2 PREREQUISITE: Permission of the instructor.

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

### **ACT 195 Accounting Co-op** 0-18-3

PREREQUISITE: Permission of the instructor.

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

### **ACT 246 Microcomputer Accounting** 3-0-3

PREREQUISITE: ACT 141.

This course utilizes the microcomputer in the study of financial accounting principles and practices. Emphasis is placed on the use of software programs for financial accounting applications. Upon completion, the student should be able to use software programs for financial accounting applications.

### **ACT 247 Advanced Accounting Applications on the Microcomputer** 3-0-3

PREREQUISITE: Permission of the instructor.

In this course, students use the microcomputer in managerial accounting. Emphasis is on a variety of software programs for managerial accounting applications. Upon completion, the student should be able to use various managerial accounting software programs.

### **ACT 249 Payroll Accounting** 3-0-3

PREREQUISITE: ACT 141.

This course focuses on federal, state and local laws affecting payrolls. Emphasis is on payroll accounting procedures and practices, and on payroll tax reports. Upon completion, the student should be able to apply knowledge of federal, state and local laws affecting payrolls.

### **ACT 253 Individual Income Tax** 3-0-3

PREREQUISITE: ACT 142.

This course focuses on the fundamentals of the federal income tax laws with primary emphasis on those affecting the individual. Emphasis is on gross income determination, adjustments to income, business expenses, itemized deductions, exemption, capital gains/losses, depreciation, and tax credits. Upon completion, the student should be able to apply the fundamentals of the federal income tax laws affecting the individual.

### **ACT 256 Cost Accounting** 3-0-3

PREREQUISITE: ACT 141.

This course familiarizes the student with cost accounting principles and techniques. Emphasis is on procedures to provide data for job order and continuous process types of industries, determination of unit costs, and preparation of cost reports. Upon completion, the student should be able to apply cost accounting principles and techniques.

### **ACT 262 Directed Studies** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is an independent study under faculty supervision. Emphasis is placed on subject relevancy and student interest and need.

## Agriculture (AGR)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**AGR 110 Introduction to Agricultural Science** 2-2-3  
This course introduces students to botany, genetics, and plant nomenclature. Topics include an overview of the agricultural industry and career opportunities. Upon completion, students should be able to perform basic tasks associated with employment in the horticultural industry.

**AGR 115 Soils and Fertilizers** 2-2-3  
This course is a study of soil properties and the management practices related to the use of fertilizers. Topics include soil classification, mapping, and fertilizer needs based on current and intended use. Upon completion, students should be able to develop soil fertility management programs.

**AGR 130 Poultry Production** 3-2-4  
This course focuses on the basic technical aspects of poultry production. Topics include housing, growing contacts, heating and cooling, nutrition, economics, and poultry health. Upon completion, students should be able to develop a poultry production and marketing plan.

**AGR 204 Entomology** 3-0-3  
This course is a study of insects with special attention given to those of economic importance. Topics include collecting, identifying and classifying insects. Upon completion, students should be able to identify major insects and describe their life cycles and habitats.

## Agricultural Production (AGP)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**AGP 106 Scientific Principles of Agricultural Production** 2-2-3  
This course introduces students to concepts and practices of modern farming operations. Topics include basic biology and chemistry needed in the production of farm products. Upon completion, students should be able to demonstrate an understanding of basic chemical and biological principles associated with crop and livestock production.

**AGP 130 Poultry Production** 3-2-4  
This course focuses on the basic technical aspects of poultry production. Topics include housing, growing contacts, heating and cooling, nutrition, economics, and poultry health. Upon completion, students should be able to develop a poultry production and marketing plan.

**AGP 218 Agricultural Salesmanship** 1-4-3  
This course focuses on agricultural sales techniques. Topics include product awareness, display, and customer relations. Upon completion, students should be able to demonstrate techniques used in effectively marketing and distributing agricultural products.

## Air Conditioning/Refrigeration Technology (ACR)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**ACR 111 Principles of Refrigeration** 1-2-3  
This course emphasizes the fundamental principles for air conditioning and refrigeration. Instruction is provided in the theory and principles of refrigeration and heat transfer, HVACR system components, common, and specialty tools for HVACR, and application of the concepts of basic compression refrigeration. Upon completion, students should identify system components and understand their functions, identify and use common and specialty HVACR tools, and maintain components of a basic compression refrigeration system.

**ACR 112 HVACR Service Procedures** 1-2-3  
This course covers system performance checks and refrigerant cycle diagnosis. Emphasis is placed on the use of refrigerant recovery/recycle units, industry codes, refrigerant coils and correct methods of charging and recovering refrigerants. Upon completion, students should be able to properly recover/recycle refrigerants and demonstrate safe, correct service procedures which comply with the no-venting laws.

**ACR 113 Refrigeration Piping Practices** 1-2-3  
The course introduces students to the proper installation procedures of refrigerant piping and tubing for the heating, ventilation, air conditioning and refrigeration industry. This course includes various methods of working with and joining tubing. Upon completion, students should comprehend related terminology, be able to fabricate pipe, tubing, and pipe fittings.

**ACR 119 Fundamentals of Gas Heating Systems** 1-2-3  
This course provides instruction on general service and installation for common gas furnace system components. Upon completion, students will be able to install and service gas furnaces in a wide range of applications.

**ACR 120 Fundamentals of Electric Heating Systems** 1-2-3  
This course covers the fundamentals of electric furnace systems. Emphasis is placed on components, general service procedures, and basic installation. Upon completion, students should be able to install and service electric furnaces, heat pumps, and solar and hydronics systems.

**ACR/ASC 121 Principles of Electricity for HVACR** 1-2-3  
This course is designed to provide the student with the basic knowledge of electrical theory and circuitry as it pertains to air conditioning and refrigeration. This course emphasizes safety, definitions, symbols, laws, circuits, and electrical test instruments. Upon completion, students should understand and be able to apply the basic principles of HVACR circuits and circuit components.

**ACR/ASC 122 HVACR Electrical Circuits** 1-2-3  
This course introduces the student to electrical circuits and diagrams. Electrical symbols and basic wiring diagrams are constructed in this course. Upon completion, student should understand standard wiring diagrams and symbols and be able to construct various types of electrical circuits.

**ACR/ASC 123 HVACR Electrical Components** 1-2-3  
This course introduces students to electrical components and controls. Emphasis is placed on the operations on motors, relays, contactors, starters, and other HVAC electrical components. Upon completion, students should be able to install electrical components and determine their proper operation.

**ACR 126 Commercial Heating Systems** 1-2-3  
This course covers the theory and application of larger heating systems. Emphasis is placed on larger heating systems associated with commercial applications such as gas heaters, boilers, unit heaters, and duct heaters. Upon completion, student should be able to troubleshoot and perform general maintenance on commercial heating systems.

**ACR 127 HVACR Electric Motors** 1-2-3  
This course covers the basic maintenance of electric motors used in HVAC/R systems. Topics include types of motors, motor operations, motor installation, and troubleshooting motors. Upon completion student should be able to install and service HVAC/R electric motors.

**ACR 130 Computer Assisted HVAC Troubleshooting** 0-1-1  
This course focuses on troubleshooting procedures. Emphasis is placed on the proper use of test equipment and machine/electrical malfunctions. Upon completion, student should be able to diagnosis and repair service problems in HVAC equipment.

**ACR 132 Residential Air Conditioning** 1-2-3  
This course introduces students to residential air-conditioning systems. Emphasis is placed on the operation, service, and repair of residential air-conditioning systems. Upon completion, students should be able to service and repair residential air-conditioning systems.

**ACR 135 Mechanical/Gas/Safety Codes** 3-0-3  
This course is to enhance the student knowledge of the Southern Mechanical and Gas Code as well as fire and job safety requirements. Emphasis is placed on code book content and compliance with installation requirements. Upon completion, students should be able to apply code requirements to all work.

**ACR 141 Environmental Systems** 2-2-4  
This course provides students with knowledge and skills of environmental chambers. Topics include theory of the refrigerant components and refrigerant circuits, programmable controllers, electrical pressure and calibration instruments and places emphasis on safety. Upon course completion, students should be able to apply environmentally-safe practices.

**ACR 147 Refrigeration Transition and Recovery Theory** 3-0-3  
This course is EPA-approved and covers material relating to the requirements necessary for type I, II, and III universal certification. Upon completion, students should be prepared to take the EPA 608 certification examination.

**ACR 148 Heat Pump Systems I** 1-2-3  
Instruction received in this course centers around the basic theory and application of heat pump systems and components. Upon completion, students will be able to install and service heat pumps in a wide variety of applications.

**ACR 149 Heat Pump Systems II** 1-2-3  
This is a continuation course of the basic theory and application of heat pump systems. Topics include the electrical components of heat pumps and their function. Upon completion, student should be able to install and service heat pumps.

**ACR 182 Special Topics in Air Conditioning and Refrigeration II** 0-3-3  
This course provides students with opportunities to experience hands-on application of specialized instruction in various areas related to the air conditioning and refrigeration industry.

**ACR 183 Special Topics in Air Conditioning and Refrigeration** 1-0-1  
This course provides students with opportunities to experience hands-on application of specialized instruction in various areas related to the air conditioning and refrigeration industry.

**ACR 203 Commercial Refrigeration** 1-2-3  
This course focuses on commercial refrigeration systems. Emphasis is placed on evaporators, condensers, compressors, expansion devices, special refrigeration components and application of refrigeration systems. Upon completion, students should be able to service and repair commercial refrigeration systems.

**ACR 205 System Sizing and Air Distribution** 1-2-3  
This course provides instruction in the load calculation of a structure and system sizing. Topics of instruction include heat loss, heat gain, equipment and air distribution sizing, and factors making acceptable indoor air quality. Upon course completion, students should be able to calculate system requirements.

**ACR 209 Commercial Air Conditioning Systems** 1-2-3  
This course focuses on servicing and maintaining commercial and residential HVACR systems. Topics include system component installation and removal and service techniques. Upon completion, the student should be able to troubleshoot and perform general maintenance on commercial and residential HVACR systems.

**ACR 210 Troubleshooting HVACR Systems** 1-2-3  
This course provides instruction in the use of various meters and gauges used in the HVACR industry. Emphasis is placed on general service procedures, system diagnosis, and corrective measure, methods of leak detection, and system evacuation, charging and performance checks. Upon completion students should be able to perform basic troubleshooting of HVAC/R.

## Anthropology (ANT)

**ANT 200 Introduction to Anthropology** 3-0-3  
This course is a survey of physical, social, and cultural development and behavior of human beings.

**ANT 230 Introduction to Archaeology** 3-0-3  
This course is an introduction to archaeological excavation techniques and post-excavation laboratory procedures.

## Art (ART)

### ART 100 Art Appreciation 3-0-3

This course is designed to help the student find personal meaning in works of art and develop a better understanding of the nature and validity of art. Emphasis is on the diversity of form and content in original art work. Upon completion, students should understand the fundamentals of art, the materials used and have a basic overview of the history of art.

### +ART 101 Art Workshop I 0-6-3

PREREQUISITE: Permission of the instructor.

This course is designed for both non-art and art majors who are interested in a variety of art projects concerned with community or college-related activities.

### +ART 102 Art Workshop II 0-6-3

PREREQUISITE: Permission of the instructor.

This course is designed for both non-art and art majors who are interested in a variety of art projects concerned with community or college-related activities.

### ART 113 Drawing I 0-6-3

This course provides the opportunity to develop perceptual and technical skills in a variety of media. Emphasis is placed on communication through experimenting with composition, subject matter and technique. Upon completion, students should demonstrate and apply the fundamentals of art to various creative drawing projects.

### ART 114 Drawing II 0-6-3

PREREQUISITE: ART 113.

This course advances the students drawing skills in various art media. Emphasis is placed on communication through experimentation, composition, technique and personal expression. Upon completion, students should demonstrate creative drawing skills, the application of the fundamentals of art, and the communication of personal thoughts and feelings.

### ART 121 Two-Dimensional Composition I 0-6-3

This course introduces the basic of concepts of two-dimensional design. Topics include the elements and principles of design with emphasis on the arrangements and relationships among them. Upon completion, students should demonstrate an effective use of these elements and principles of design in creating two-dimensional compositions.

### +ART 122 Two-Dimensional Composition II 0-6-3

PREREQUISITE: ART 121.

This course covers the theories and practice of composing two-dimensional images. Emphasis is placed on the relation between the basic elements and principles of design and their impact on the visual message. Upon completion, students should, through personal expression, demonstrate an effective use of these elements and principles of design in creating two-dimensional compositions.

### ART 127 Three-Dimensional Composition 0-6-3

This introduction to art materials and principles of design acquaints the beginner with fundamentals of three-dimensional art. This course is open to all students and is especially recommended for those who plan further study in art and art education.

### ART 133 Ceramics I 0-6-3

This course introduces methods of clay forming as a means of expression. Topics may include hand building, wheel throwing, glazing, construction, design, and the functional and aesthetic aspects of pottery. Upon completion, students should demonstrate through their work, a knowledge of the methods, as well as an understanding of the craftsmanship and aesthetics involved in ceramics.

### ART 134 Ceramics II 0-6-3

PREREQUISITE: ART 133.

This course develops the methods of clay forming as a means of expression. Topics may include hand building, glazing, design and the functional and aesthetic aspects of pottery, although emphasis will be placed on the wheel throwing method. Upon completion, students should demonstrate improved craftsmanship and aesthetic quality in the production of pottery.

### +ART 143 Crafts I 0-6-3

This course is an introduction to various creative crafts, which may include work with fibers, metal, glass or other media. Emphasis is placed on processes, techniques, materials and creative expression. Upon completion, students should be able to demonstrate creative uses of materials, a knowledge of the fundamentals of art, and an understanding of craftsmanship, and aesthetic quality.

### +ART 144 Crafts II 0-6-3

PREREQUISITE: ART 143.

This course develops skills in creating a variety of crafts, which may include work with fibers, metal, glass or other media. Emphasis is placed on processes, techniques, materials, and creative expression. Upon completion, students should demonstrate an improved level of competence in the creative uses of materials, craftsmanship, the fundamentals of art, and aesthetics.

### ART 173 Photography I 0-6-3

This course is an introduction to the art of photography. Emphasis is placed on the technical and aesthetic aspects of photography with detailed instruction in darkroom techniques. Upon completion, students should understand the camera as a creative tool, understand the films, chemicals and papers, and have a knowledge of composition and history.

### ART 174 Photography II 0-6-3

PREREQUISITE: ART 173.

This course advances the students' technical and aesthetic knowledge of photography beyond the introductory level. Emphasis is placed on photographic composition and darkroom techniques as a means of communication. Upon completion, students should demonstrate through the photographic process his/her creative and communication skills.

### +ART 203 Art History I 3-0-3

This course covers the chronological development of different forms of art, such as sculpture, painting, and architecture. Emphasis is placed on history from the ancient period through the Renaissance. Upon completion, students should be able to communicate a knowledge of time period and chronological sequence including a knowledge of themes, styles and of the impact of society on the arts.

**+ART 204 Art History II** 3-0-3  
This course covers a study of the chronological development of different forms of art, such as sculpture, painting and architecture. Emphasis is placed on history from the Baroque to the present. Upon completion, students should be able to communicate a knowledge of time period and chronological sequence including a knowledge of themes, styles and of the impact of society on the arts.

**+ART 221 Computer Graphics I** 0-6-3  
This course is designed to acquaint the student with the technology, vocabulary, and procedures used to produce artworks with computers. Emphasis is placed on the fundamentals of art, creativity, and the understanding of various graphic software. Upon completion, students should demonstrate a knowledge of computer graphics through production on a graphic program in a computer environment.

**+ART 222 Computer Graphics II** 0-6-3  
PREREQUISITE: ART 221 or permission of instructor.  
These courses are designed to enhance the student's ability to produce computer generated graphics. Emphasis is on the application of original design to practical problems using a variety of hardware and software. Upon completion, students should have an understanding of professional computer graphics.

**+ART 233 Painting I** 0-6-3  
This course is designed to introduce the student to fundamental painting processes and materials. Topics include art fundamentals, color theory, and composition. Upon completion, students should be able to demonstrate the fundamentals of art and discuss various approaches to the media and the creative processes associated with painting.

**+ART 234 Painting II** 0-6-3  
PREREQUISITE: ART 233.  
This course is designed to develop the student's knowledge of the materials and procedures of painting beyond the introductory level. Emphasis is placed on the creative and technical problems associated with communicating through composition and style. Upon completion, students should be able to demonstrate the application of the fundamentals of painting and the creative process to the communication of ideas.

**+ART 251 Lettering I** 0-6-3  
This course introduces script and constructed lettering. Topics include types of lettering, materials, techniques, styles, layout and composition. Upon completion, students should be able to demonstrate lettering procedures and skills that reflect appropriate uses.

**+ART 252 Lettering II** 0-6-3  
PREREQUISITE: ART 251.  
This course advances the students' lettering skills in script and constructed letter forms. Emphasis is placed on technical skills and creativity in using the constructed letter. Upon completion, students should demonstrate through assigned projects the personal, creative, and competent use of lettering styles.

**+ART 291 Supervised Study in Studio Art I** 0/2-8/1-4  
PREREQUISITE: Permission of the instructor.  
This course is designed to enable the student to continue studio experiences in greater depth. Topics are to be chosen by the student with the approval of the instructor. Upon completion, students should have a greater expertise in a particular area of art.

**+ART 292 Supervised Study in Studio Art II** 0/2-8/1-4  
PREREQUISITE: ART 291 or permission of the instructor.  
This course is designed to enable the student to continue studio experiences in greater depth. Topics are chosen by the student with the approval of the instructor. Upon completion, students should have greater expertise in a particular area of art.

**ART 299 Art Portfolio** 0-2-8-1-4  
PREREQUISITE: Permission of the instructor.  
This course is designed to help the art major in the preparation and presentation of an art portfolio. Emphasis is placed on representing the student's potential as an artist in order to interest employers, clients or schools. Upon completion, students should be able to make a professional presentation of their design and communication skills.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Basic Automotive Collision Repair (ABR)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**ABR 111 Non-Structural Repair** 1-4-3  
Students are introduced to basic principles of non-structural panel repairs. Topics include shop safety, identification and use of hand/power tools, panel preparation, sheet metal repairs, and materials.

**ABR 114 Non-Structural Panel Replacement** 1-4-3  
Students are introduced to principles of non-structural panel replacement. Topics include replacement and alignment of bolt on panels, full and partial panel replacement procedures, and attachment methods.

**ABR 122 Surface Preparation** 1-4-3  
This course introduces students to methods of surface preparation for vehicular refinishing. Topics include sanding techniques, metal treatment, selection undercoats, and proper masking procedures.

**ABR 123 Paint Application & Equipment** 1-4-3  
This course introduces students to methods of paint application and equipment used for vehicular refinishing. Topics include spray gun and related equipment use, paint mixing, matching, and applying the final topcoat.

**ABR 151 Safety & Environmental Practices** 1-4-3  
This course is designed to instruct the student in safe work practices. Topics include OSHA requirements, the right to know laws, EPA regulations as well as state and local laws.

**ABR 154 Automotive Glass and Trim** 1-4-3  
This course is a study of automotive glass and trim. Emphasis is placed on removal and replacement of structural glass, non-structural glass and automotive trim. Upon completion, students should be able to remove and replace automotive trim and glass.

**ABR 156 Cutting and Welding** 1-4-3  
Students are introduced to the various automotive cutting and welding processes. Emphasis is placed on safety, plasma arc and oxy-acetylene cutting, resistance type spot welding, and Metal Inert Gas (MIG) welding. Upon completion, students should be able to safely perform automotive cutting and welding procedures.

**ABR 157 Plastic Repairs** 1-4-3  
This course provides instruction in automotive plastic repairs. Topics include plastic welding (airless, hot and chemical), use of flexible repair fillers, identification of types of plastics, and determining the correct repair procedures for each. Upon completion, students should be able to correctly identify and repair the different types of automotive plastics.

**ABR 181 Special Topics in Auto Body** 1-0-1  
This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion, students should be able to demonstrate skills to meet specific needs.

**ABR 182 Special Topics in Auto Body** 2-0-2  
This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion, students should be able to demonstrate skills to meet specific needs.

**ABR 213 Automotive Structural Analysis** 1-4-3  
Students learn methods of determining structural misalignment. Topics include methods of inspection, types of measuring equipment, data sheets, and identifying types of structural damage.

**ABR 214 Automotive Structural Repair** 1-4-3  
This course provides instruction in the correction of structural damage. Topics include types and use of alignment equipment, anchoring and pulling methods, and repair/replacement of structural components.

**ABR 223 Automotive Mechanical Components** 1-4-3  
This course provides instruction in collision related mechanical repairs. Emphasis is placed on diagnosis and repairs to drive train, steering/suspension components and various other mechanical repairs.

**ABR 224 Automotive Electrical Components** 1-4-3  
This course provides instruction in collision related electrical repairs and various restraints systems, including seat belts, seat belt tensioners, and airbags. Topics include basic DC theory, types of diagnostic equipment, circuit protection, wire repair and use of wiring diagrams, airbag modules, and impact sensors.

**ABR 255 Steering & Suspension** 1-4-3  
This course introduces students to the various types of suspension and steering systems used in the automotive industry. Emphasis is placed on system components, suspension angles and effect of body/frame alignment on these components and angles.

**ABR 258 Heating & AC in Collision Repair** 1-4-3  
This course is a study of automotive air conditioning, heating, and cooling systems. Topics include automotive air conditioning, heating and cooling systems theory, component replacement and system services.

**ABR 261 Restraint Systems** 1-4-3  
Both the function and design of various restraints and passive restraints systems, including seat belts, seat belt tensioners, and airbags, will be discussed. Topics include airbag modules and impact sensors for both front and side airbag systems. Students learn about using service manuals, flow charts, and wiring diagrams during the diagnosis and repair process.

**ABR 265 Paint Defects & Final Repairs** 1-4-3  
This course introduces students to methods of identifying paint defects, causes, cures, and final detailing. Students learn to troubleshoot and correct paint imperfections.

**ABR 266 Aluminum Welding in Collision Repair** 1-4-3  
This course covers the principles and techniques of aluminum GMA (MIG) welding. Students learn to set up and tune a welding machine, address safety issues, perform proper welding techniques, prepare metal surfaces, and identify and correct weld defects.

**ABR 281 Special Topics in Auto Body** 3-0-3  
This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion, students should be able to demonstrate skills to meet specific needs.

**ABR 293 Auto Body Repair Co-op** 3-0-3  
This course is designed to provide practical shop experience for advanced students through part-time employment in the collision repair industry. Emphasis is placed on techniques used in collision repair facilities. Upon completion, students should have gained skills necessary for entry level employment.

## Basic Automotive Service Technology and Advanced Automotive Service Technology (AUM)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**AUM 101 Fundamentals of Automotive Technology** 1-4-3  
This course provides basic instruction in Fundamentals of Automotive Technology.

**AUM 110 Electrical and Electronic Systems I** 1-4-3  
This is an introductory course in automotive electrical and electronic systems. Emphasis is placed on troubleshooting and repair of systems, subsystems, and components.

**AUM 121 Braking Systems** 1-4-3  
This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical application of brakes. ABR 223 Automotive Mechanical Components is a suitable substitute for this course.

**AUM 122 Steering, Suspension and Alignment** 1-4-3  
This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical application of steering and suspension. ABR 255 - Steering & Suspension is a suitable substitute for this course.

**AUM 124 Engine Repair I** 1-4-3  
This course provides instruction on the operation, design, and superficial repair of automotive engines. Emphasis is placed on understanding the four stroke cycle, intake and exhaust manifolds and related parts, engine mechanical timing components, engine cooling and lubrication system principles and repairs, and basic fuel and ignition operation.

**AUM 130 Drive Train and Axles** 1-4-3  
This course provides basic instruction in automotive drive trains and axles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and driveability. ABR 223 Automotive Mechanical Components is a suitable substitute for this course.

**AUM 133 Motor Vehicle Air Conditioning** 1-4-3  
This course provides basic instruction in theory, operation, and repair of automotive heating and air conditioning systems. Emphasis is placed on the understanding and repair of vehicle air conditioning and heating systems, including but not limited to air management, electrical and vacuum controls, refrigerant recovery, and component replacement. ABR 258 - Heating and AC in Collision Repair is a suitable substitute for this course.

**AUM 181 Special Topics** 1-0-1  
These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive or related area in automotive mechanics. Upon completion, the student should be able to work with minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**AUM 182 Special Topics** 1-0-1  
These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive or related area in automotive mechanics. Upon completion, the student should be able to work with minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**AUM 210 Electrical and Electronic Systems II** 1-4-3  
This course provides instruction in advanced automotive electrical and electronic systems. Emphasis is placed on advanced troubleshooting and repair of electrical systems, subsystems, and components.

**AUM 220 Engine Repair II** 1-4-3  
This course provides in depth instruction concerning internal engine diagnosis, overhaul and repair, including but not necessarily limited to the replacement of timing chains, belts, and gears, as well as the replacement or reconditioning of valve train components as well as replacement of pistons, connecting rods, piston rings, bearings, lubrication system components, gaskets, and oil seals.

**AUM 224 Manual Transmission and Transaxle** 1-4-3  
This course covers basic instruction in manual transmissions and transaxles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and driveability.

**AUM 230 Auto Transmission and Transaxle** 1-4-3  
This course covers basic instruction in automatic transmissions and transaxles. Emphasis is placed on the comprehension of principles and powerflow of automatic transmissions and repairing or replacing internal and external components.

**AUM 239 Engine Performance** 1-4-3  
This course provides basic instruction in engine performance with emphasis on fuel and ignition systems relating to engine operation.

**AUM 244 Engine Performance II** 1-4-3  
This course provides advanced instruction in engine performance. Emphasis is placed on engine management and computer controls of ignition, fuel, and emissions systems relating to engine performance and driveability.

**AUM 246 Automotive Emissions** 1-4-3  
This is an introductory course in automotive emission systems. Emphasis is placed on troubleshooting and repair of systems, subsystems, and components.

**AUM 281 Special Topics** 1-4-3  
These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive or related area in automotive mechanics. Upon completion, the student should be able to work with minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**AUM 291 Co-op** 0-5-3  
These courses constitute a series wherein the student works on a part-time basis in a job directly related to automotive mechanics. In these courses the employer evaluates the student's productivity and the student submits a descriptive report of his work experiences. Upon completion, the student will demonstrate skills learned in an employment setting.

## Basic Study Skills/Personal Development (BSS)\*

**BSS 090 Study Skills** 1-0-1  
This course is intended for those who placed into credit-level course work but who are not maintaining satisfactory academic progress toward meeting program goals. Topics include study skills, note-taking, learning styles and strategies, test taking, goal setting, and self-assessment skills. Upon completion, students should be able to manage their learning experiences to successfully meet educational goals.

**BSS 115 Success and Study Skills** 1-0-1  
This course provides an orientation to the campus resources and academic skills necessary to achieve educational objectives. Emphasis is placed on an exploration of facilities and services, study skills, library skills, self-assessment, wellness, goal-setting, and critical thinking. Upon completion, students should be able to apply appropriate study strategies and techniques to the development of an effective study plan.

**BSS 120 Career Assessment** 1-0-1  
This course provides the information and strategies necessary to develop clear personal, academic, and professional goals. Topics include personality styles, goal setting, various college curricula, career choices, and campus leadership development. Upon completion, student should be able to clearly state their personal, academic, and professional goals and have a feasible plan of action to achieve those goals.

**BSS 121 Managing a Team** 1-0-1  
This course focuses on the process of the individual with an awareness of the reality in the collective teamwork approach for the workplace emphasizing process-orientation. Topics include how teams work, team effectiveness, team-building techniques, positive thinking, and leadership principles. Upon completion, students should be able to demonstrate an understanding of how team work strengthens ownership, involvement, and responsibility in the workplace.

**BSS 220 Professional Transition** 1-0-1  
This course provides preparation for meeting the demands of employment or education beyond the community college experience. Emphasis is placed on strategic planning, gathering information on workplaces or colleges, and developing human interaction skills for professional, academic, and/or community life. Upon completion, students should be able to successfully make the transition to appropriate workplace or senior institutions.

## Biology (BIO)

**BIO 103 Principles of Biology I** 3-2-4  
BIO 103A is the theory portion only of BIO 103. Students must take BIO 103L as a co-requisite to BIO 103A. BIO 103L is the lab portion that accompanies the lecture class. This is an introductory course for science and non-science majors. It covers physical, chemical, and biological principles common to all organisms. These principles are explained through a study of cell structure and function, cellular reproduction, basic biochemistry, cell energetics, the process of photosynthesis, and Mendelian and molecular genetics. Also included are the scientific method, basic principles of evolution, and an overview of the diversity of life with emphasis on viruses, prokaryotes, and protist. A 120 minute laboratory is required.

**+BIO 104 Principles of Biology II** 3-3-4  
PREREQUISITE: BIO 103 or BIO 103A.  
This course is an introduction to the basic ecological and evolutionary relationships of plants and animals and a survey of plant and animal diversity including classification, morphology, physiology, and reproduction. A 180 minute laboratory is required.

**+BIO 111 Human Biology** 3-2-4  
This course for the non-science major covers the basic structure and function of the human body. Laboratory is required. This course is offered upon sufficient enrollment, and is not a core transfer course.

**BIO 201 Human Anatomy and Physiology I** 3-2-4  
\*BIO 103 is strongly recommended  
Human Anatomy and Physiology I covers the structure and function of the human body. Included is an orientation of the human body, basic principles of chemistry, a study of cells and tissues, metabolism, joints, the integumentary, skeletal, muscular, and nervous systems, and the senses. Dissection, histological studies, and physiology are featured in the laboratory experience. A 120 minute laboratory is required.

**+BIO 202 Human Anatomy and Physiology II** 3-2-4  
PREREQUISITE: BIO 201.  
Human Anatomy and Physiology II covers the structure and function of the human body. Included is a study of basic nutrition, basic principles of water, electrolyte, and acid-base balance, the endocrine, respiratory, digestive, excretory, cardiovascular, lymphatic, and reproductive systems. Dissection, histological studies, and physiology are featured in the laboratory experience. A 120 minute laboratory is required.

**+BIO 220 General Microbiology** 2-4-4  
PREREQUISITE: BIO 103 or BIO 103A or BIO 201  
(RECOMMENDED 4 SEMESTER HOURS OF CHEMISTRY).  
This course includes historical perspectives, cell structure and function, microbial genetics, infectious diseases, immunology, distribution, physiology, culture, identification, classification, and disease control of microorganisms. The laboratory experience includes micro-techniques, distribution, culture, identification, and control. Two 120 minute laboratories are required.

**+BIO 250 Directed Studies in Biology** 0/2-8/1-4  
PREREQUISITE: Permission of the instructor.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Business (BUS)

**BUS 193 Business Co-op I** 1-0-1  
PREREQUISITE: Successful completion of two (2) business courses.

This course is part of a series wherein the student works in an accounting-related job. Emphasis is placed on student's work experience as it integrates academic knowledge with practical application through exposure to accounting practices in the business environment. The grade is based on the employer's evaluation of each student's productivity, content of a descriptive report submitted by the student, and student development and assessment of a learning contract.

**BUS 194 Business Co-op II** 1-0-1  
PREREQUISITE: Successful completion of BUS 193.

This course is part of a series wherein the student works in an accounting-related job. Emphasis is placed on student's work experience as it integrates academic knowledge with practical application through exposure to accounting practices in the business environment. The grade is based on the employer's evaluation of each student's productivity, content of a descriptive report submitted by the student, and student development and assessment of a learning contract.

**BUS 198 Computer Information Systems in a Call Center** 3-0-3

PREREQUISITE: Instructor approval and minimum WorkKeys levels.

This course is a "hands-on" introduction to the computer systems used in a typical call center. Topics include computer fundamentals, basic hardware, and specific software applications common to the call center industry. Working within a customer information database and basic keyboarding will also be a component of this course.

**BUS 199 Call Center Operations** 2-0-2

PREREQUISITE: Instructor approval and minimum WorkKeys levels.

This course is an introduction to the call center environment. Topics include call center organizational structures, terminology, how calls are screened and routed, basic telephone functions, and the call flow process. Also included is an overview of customer service and the competitive advantage in the marketplace and performance measures used in typical call centers.

**BUS 200 Customer Service Communications** 5-0-5

PREREQUISITE: Instructor approval and minimum WorkKeys levels.

This course provides a basic study of the principles of communicating with customers. Topics include communication barriers, building rapport, creating positive impressions, communicating with various customer types, listening skills, telephone etiquette, making and meeting commitments, handling difficult customers and problem solving. Also included is conversational Spanish in a call center.

**BUS 215 Business Communication** 3-0-3

This course covers written, oral and nonverbal communications. Topics include the application of communication principles to the production of clear, correct, and logically organized faxes, e-mail, memos, letters, resumes, reports, and other business communications.

**BUS 241 Principles of Accounting I** 3-0-3

This course is designed to provide a basic theory of accounting principles and practices used by service and merchandising enterprises. Emphasis is placed on financial accounting, including the accounting cycle, and financial statement preparation analysis.

**BUS 242 Principles of Accounting II** 3-0-3

This course is a continuation of BUS 241. In addition to a study of financial accounting, this course also places emphasis upon managerial accounting, with coverage of corporations, statement analysis, introductory cost accounting, and use of information for planning, control, and decision making.

**BUS 248 Managerial Accounting** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to familiarize the student with management concepts and techniques of industrial accounting procedures. Emphasis is placed on cost behavior, contribution approach to decision-making, budgeting, overhead analysis, cost-volume-profit, analysis and cost accounting systems.

**+BUS 261 Business Law I** 3-0-3

This course provides an overview of legal principles affecting businesses. Topics include contracts, agency and employment, negotiable instruments, bailments, and sale of goods.

**BUS 263 The Legal and Social Environment of Business** 3-0-3

This course provides an overview of the legal and social environment for business operations with emphasis on contemporary issues and their subsequent impact on business. Topics include the Constitution, the Bill of Rights, the legislative process, civil and criminal law, administrative agencies, trade regulations, consumer protection, contracts, employment and personal property.

**+BUS 271 Business Statistics I** 3-0-3

This is an introductory study of basic statistical concepts applied to economic and business problems. Topics include the collection, classification, and presentation of data, statistical description and analysis of data, measures of central tendency and dispersion, elementary probability, sampling, estimation and introduction to hypothesis testing.

**+BUS 272 Business Statistics II** 3-0-3

PREREQUISITE: BUS 271.

This course is a continuation of BUS 271. Topics include sampling theory, statistical interference, regression and correlation, chi square, analysis of variance, time series index numbers, and decision theory.

**+BUS 275 Principles of Management** 3-0-3

This course provides a basic study of the principles of management. Topics include planning, organizing, staffing, directing, and controlling with emphasis on practical business applications.

**BUS 279 Small Business Management** 3-0-3

PREREQUISITE: BUS 241 or ACT 141

This course provides an overview of the creation and operation of a small business. Topics include buying a franchise, starting a business, identifying capital resources, understanding markets, managing customer credit, managing accounting systems, budgeting systems, inventory systems, purchasing insurance, and the importance of appropriate legal counsel.

**+BUS 285 Principles of Marketing** 3-0-3

This course provides a general overview of the field of marketing. Topics include marketing strategies, channels of distribution, marketing research, and consumer behavior.

**BUS 298 Directed Studies** 1-3/0/1-3

PREREQUISITE: Permission of the instructor.

This course offers independent study under faculty supervision. Emphasis is placed on subject relevancy and student interest and need.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor

**Basic Cabinetmaking (CAB)\***

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CAB 101 Introduction to Cabinetmaking** 1-4-3

This is a beginning woodworking course which deals with basic materials and processes. Topics include introduction to tools and equipment and safety. Upon completion, students should be able to perform techniques for building small projects, techniques of gluing, clamping, mailing, and screwing.

**CAB 102 Introduction to Lumber** 1-6-3  
This is an introductory course to lumber, grades, sizes, characteristics, and uses. Also included in this course are the operation, care, and sharpening of woodworking equipment. Upon completion, students should be able to construct and finish a furniture project and demonstrate the characteristics and methods of sawing lumber.

**CAB 103 Sizes, Dimension, and Joints** 1-4-3  
This course includes the study of cutting lumber to dimensions and materials to size with power tools. Emphasis is on job planning and the construction of all types of joints made with hand and power tools. Upon completion, students should be able to plan jobs, make shop drawings, job layouts and patterns.

**CAB 104 Cabinet Shop Operations** 3-0-3  
This course covers establishing and maintaining a custom cabinet shop. Topics include financing, equipment acquisition, maintenance, inventory techniques, OSHA requirements, shop organization, and safety and delivery systems. Upon completion, students should be able to organize and maintain a custom cabinet business.

**CAB 110 Basic Safety, Tools, and Equipment** 2-5-4  
This course teaches the essentials of shop safety. It also teaches the student how to use and care for tools and equipment.

**CAB 134 Stairs, Molding, and Trim** 2-5-4  
This course will teach the basics of stair building layout, design, and construction. Students will also learn how to cut and install trim and moldings.

**CAB 142 Wood Finishing and Spraying** 2-8-5  
This course teaches the essentials of pre-finishing operations which include removal of exterior surface glue, repairing wood imperfections, final sanding, and bleaching. The application of stains, spraygun application of finishing materials, and waxing to obtain the final finish are also covered.

**CAB 145 Refinishing Furniture and Antiques** 0-4-2  
This course offers instruction in refinishing furniture and restoring antiques. Emphasis is on the removal of old finish by stripping, washing, and sanding furniture; repair of broken pieces; and the use of veneers in patching. Upon completion, students should be able to refinish furniture and antiques.

**CAB 193, 291, 292 Co-op** 1/3-5/15-1/3  
PREREQUISITE: Permission of instructor.  
These courses constitute a series wherein the student works on a part-time basis in a job directly related to cabinetmaking. In these courses the employer evaluates the student's productivity and the student submits a descriptive report of his work experiences. Upon completion, the student will demonstrate skills learned in an employment setting.

**CAB 204 Cabinetmaking and Millwork** 1-10-5  
PREREQUISITE: CAB 102 or permission of the instructor.  
This course focuses on design and construction of casework. Topics include study of designs, construction and installation of kitchen cabinets, vanities, shelves, and other casework and the use and installation of cabinet hardware. Upon completion, students should be able to design, construct and install basic interior casework.

**CAB 205 Furniture Construction** 1-10-5  
PREREQUISITE: Permission of the instructor.  
This course covers design and construction of fine furniture. Emphasis is on the development of highly advanced woodworking skills, such as turning duplicate parts, joinery, building jigs and fixtures. Upon completion, students should be able to perform basic skills necessary to construct fine furniture.

**CAB 230 Estimating Costs in Cabinetmaking** 1-2-2  
This course focuses on estimating costs necessary to complete cabinetmaking projects. Emphasis is on figuring costs of materials and labor and on the use of pertinent formulas. Upon completion, students should be able to estimate costs of complete cabinetmaking projects.

**CAB 260 Woodturning** 1-10-5  
PREREQUISITE: Permission of the instructor.  
This course focuses on turning components for fine furniture projects. Emphasis is on operation and maintenance of wood lathes and tools. Upon completion, students should be able to turn duplicate posts and table legs.

## **Basic Carpentry (CAR)\***

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CAR 111 Construction Basics** 3-0-3  
This course introduces students to the opportunities in and requirements of the construction industry. Topics include economic outlook for construction, employment outlook, job opportunities, training, apprenticeship, entrepreneurship, construction tools, materials, and equipment, job safety and OSHA standards. Upon completion, students should be able to identify the job market, types of training, knowledge of apprenticeship opportunities, construction tools, materials, equipment, and safety procedures.

**CAR 112 Floors, Walls, Site Prep** 3-0-3  
This course introduces the student to floor and wall layout, and construction. Topics include methods of house framing, components of floor framing, layouts, sub-flooring, connectors and fasteners, and site preparation. Upon completion, students should be able to identify various types of floor framing systems, select the sizes of floor joists, identify types of house framing, list types of fasteners, and identify property lines, set backs, and demonstrate a working knowledge of terrain and batter boards.

**CAR 113 Floors, Walls, Site Prep Lab** 0-9-3  
COREQUISITE: CAR 112.  
The student will engage in applications of floor and wall construction, application of required tools, use of the builder transit, level rod, tape measure and grade stakes. Emphasis is placed on cutting sill plates, floor joists, girders, header bridging, sub-flooring, stud wall partitions, door and window headers, wall bracing, leveling instruments, and batter boards. Upon completion, students should be able to layout and construct a floor, including the sill, joist bridging and openings, install sub-flooring, construct interior and exterior walls, and layout property stakes of site plans.

**CAR 121 Introduction to Blueprint Reading** 3-0-3

This course introduces the student to the basic concepts of blueprint reading. Topics include scales, symbols, site plans, and notations. Upon completion, the student should be able to identify drawings, scale various drawings, identify different types of lines, symbols, and notations.

**CAR 131 Roof and Ceiling Systems** 3-0-3

This course focuses on the design and installation of roof and ceiling systems. Emphasis is placed on rafters, trusses, ceiling joists, roof decking, and roofing materials. Upon completion, students should be able to design a roof and ceiling system, identify proper installation methods of roofing materials, and describe applicable safety rules.

**CAR 132 Interior and Exterior Finishing** 1-5-3

This course introduces the student to interior and exterior finishing materials and techniques. Topics include interior trim of windows and doors, ceilings and wall moldings, exterior sidings, trim work, painting, and masonry finishes. Upon completion, students should be able to identify different types of doors, windows and moldings and describe the uses of each, identify types of exterior sidings and trim, and describe the different types of paint and their proper application.

**CAR 133 Roof and Ceiling Systems Lab** 0-9-3

COREQUISITE: CAR 131.

The course provides students with practical experience in building and installing roof and ceiling systems. Emphasis is placed on job site safety, layout and cutting of rafters and joists, cutting and building trusses, installing roof decking and roofing materials. Upon completion, students should be able to cut and install rafters, joists and trusses, cut and apply roof decking and roofing materials, and apply safety rules for job site.

**CAR 134 Stairs, Moldings, and Trim** 2-5-4

This course focuses on the basics of stair building layout, design, and construction. Topics also include cutting and installing trim and moldings. Upon completion, students should be able to construct stairs, cut and install molding.

**CAR 211 Construction Specialties** 3-0-3

This course introduces the students to the design process for stairs and cabinets. Topics include stair and cabinet design, rod layout, and cabinet finishes. Upon completion, students should be able to design stairways and cabinets, layout a rod for building cabinets, and identify proper finishes for cabinetry.

**CAR 215 Special Projects in Carpentry** 1-5-3

PREREQUISITE: Permission of the instructor.

This course allows the student to plan, execute, and present results of individual projects in carpentry. Emphasis is placed on enhancing skill attainment in the carpentry field. This culminating course allows students to independently apply skills attained in previous courses.

**CAR 216 Home Builders Licensing** 1-5-3

This course focuses on home building and remodeling regulations and standards in Alabama. Topics include requirements for licensing, filing, qualifications, fees and exams. This course prepares students to take the state licensing test.

**CAR 217 Estimating** 1-5-3

PREREQUISITE: CAR 121.

This course provides the student with technical knowledge to estimate construction materials and costs for preparing order sheets or bids on construction jobs. Emphasis is placed on techniques for estimating jobs. Upon completion, the student should be able to develop a comprehensive estimate for a carpentry job.

**CAR 218 Construction Project Management** 1-5-3

PREREQUISITE: Permission of the instructor.

This course focuses on the basic scheduling of projects. Topics include project definition, basic building blocks for scheduling, refining a schedule and communications. Upon completion, students are expected to understand the meaning and purpose of project planning and management, use of a schedule in management, and be able to communicate and coordinate work activities.

**CAR 219 Computer Aided Drafting in Carpentry** 1-5-3

PREREQUISITE: Permission of the instructor.

This course introduces students to computer aided drafting (CAD). Topics include the drawing editor, the CAD interface, prototype drawings, the drawing environment, basic draw commands, basic edit commands, layering, display commands, basic dimensioning, hatching, blocks and attributes, and plotting/printing. Upon completion, students should be able to design basic construction projecting using CAD.

**CAR 220 Carpentry Computer Software** 1-5-3

PREREQUISITE: Permission of the instructor.

This course introduces the student to software applications normally used by the construction specialist. Topics may include job costing, estimating, CAD, or similar applications. Upon completion, the student should be able to demonstrate proficiency with software applications included in the content.

**CAR 226 Metal Framing** 0-3-3

This course introduces the students to metal framing of floors, walls, ceilings, and roofs. Emphasis is placed on metal frame construction. Upon completion, students are expected to be able to describe components and proper application of metal framing, properly construct floors, walls, ceilings, and roofs.

**CAR 228 Stairs, Molding, and Trim** 1-2-3

This course focuses on the basics of stair design, layout, and construction. Topics also include cutting and installing stair trim and molding. Upon course completion, students should be able to layout, cut, and construct stairs, and install trim and molding.

**CAR 291-3 Cooperative Education in Carpentry** 1/3-5/15-1/3

PREREQUISITE: Permission of the Instructor

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

## Chemistry (CHM)

**+CHM 099 Developmental Chemistry** 3-0-3  
This course is designed for students with little or no background in chemistry. This preparatory course offers a detailed review of the mathematical base for chemistry, including formulas and equations, and covers basic chemical calculations of stoichiometry, gas laws and solutions. Laboratory techniques and safety are also included.

**+CHM 104 Introduction to Inorganic Chemistry** 3-3-4  
PREREQUISITE: MTH 116 or MTH 098 or equivalent math placement score.

This is a survey course of general chemistry for students who do not intend to major in science or engineering and may not be substituted for CHM 111. Lecture will emphasize the facts, principles, and theories of general chemistry including math operations, matter and energy, atomic structure, symbols and formulas, nomenclature, the periodic table, bonding concepts, equations, reactions, stoichiometry, gas laws, phases of matter, solutions, pH, and equilibrium reactions. Laboratory is required.

**+CHM 105 Introduction to Organic Chemistry** 3-3-4  
PREREQUISITE: CHM 104 or CHM 111.

This is a survey course of organic chemistry and biochemistry for students who do not intend to major in science or engineering. Topics will include basic nomenclature, classification of organic compounds, typical organic reactions, reactions involved in life processes, function of biomolecules, and the handling and disposal of organic compounds. Laboratory is required.

**+CHM 111 College Chemistry I** 3-3-4  
PREREQUISITE: MTH 100 or equivalent math placement score.

This is the first course in a two-semester sequence designed for the science or engineering major who is expected to have a strong background in mathematics. Topics in this course include measurement, nomenclature, stoichiometry, atomic structure, equations and reactions, basic concepts of thermochemistry, chemical and physical properties, bonding, molecular structure, gas laws, kinetic-molecular theory, condensed matter, solutions, colloids, and some descriptive chemistry topics. Laboratory is required.

**+CHM 112 College Chemistry II** 3-3-4  
PREREQUISITE: CHM 111.

This is the second course in a two-semester sequence designed primarily for the science and engineering student who is expected to have a strong background in mathematics. Topics in this course include chemical kinetics, chemical equilibria, acids and bases, ionic equilibria of weak electrolytes, solubility product principle, chemical thermodynamics, electrochemistry, oxidation-reduction, nuclear chemistry, an introduction to organic chemistry and biochemistry, atmospheric chemistry, and selected topics in descriptive chemistry including the metals, nonmetals, semi-metals, coordination compounds, transition compounds, and post-transition compounds. Laboratory is required.

**+CHM 221 Organic Chemistry I** 3-3-4  
PREREQUISITE: CHM 112.

This is the first course in a two-semester sequence. Topics in this course include nomenclature, structure, physical and chemical properties, synthesis, and typical reactions for aliphatic, alicyclic, and aromatic compounds with special emphasis on reaction mechanisms, spectroscopy, and stereochemistry. Laboratory is required and will include the synthesis and confirmation of representative organic compounds with emphasis on basic techniques.

**+CHM 222 Organic Chemistry II** 3-3-4  
PREREQUISITE: CHM 221.

This is the second course in a two-semester sequence. Topics in this course include nomenclature, structure, physical and chemical properties, synthesis, and typical reactions for aliphatic, alicyclic, aromatic, and biological compounds, polymers and their derivatives, with special emphasis on reaction mechanisms, spectroscopy, and stereochemistry. Laboratory is required and will include the synthesis and confirmation of representative organic compounds with emphasis on basic techniques.

**CHM 250 Directed Studies in Chemistry** 1-0-1  
PREREQUISITE: Divisional approval.

This course is designed for independent study in specific areas of chemistry chosen in consultation with a faculty member and carried out under faculty supervision. This course may be repeated three (3) times for credit.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Child Development (CHD)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CHD 100 Introduction to Early Care and Education of Children** 3-0-3

This course introduces the child care profession including the six functional areas of the Child Development Associate (CDA) credential. Emphasis is placed on using positive guidance techniques, setting up a classroom and planning a schedule. Upon completion, students should be able to create and modify children's environments to meet individual needs, use positive guidance to develop positive relationships with children, and promote children's self-esteem, self-control and self-motivation.

**CHD 201 Child Growth and Development Principles** 3-0-3

This course is a systematic study of child growth and development from conception through early childhood. Emphasis is placed on principles underlying physical, mental, emotional and social development, and on methods of child study and practical implications. Upon completion, students should be able to use knowledge of how young children differ in their development and approaches to learning to provide opportunities that support the physical, social, emotional, language, cognitive, and aesthetic development of children.

**CHD 202 Children's Creative Experiences** 2-2-3

This course focuses on fostering creativity in preschool children and developing a creative attitude in teachers. Topics include selecting and developing creative experiences in language arts, music, art, science, math and movement with observation and participation with young children required. Upon completion, students should be able to select and implement creative and age-appropriate experiences for young children.

**CHD 203 Children's Literature and Language Development** 2-2-3

This course surveys appropriate literature and language arts activities designed to enhance young children's speaking, listening pre-reading and writing skills. Emphasis is placed on developmental appropriateness as related to language. Upon completion, students should be able to create, evaluate and demonstrate activities which support a language-rich environment for young children.

**CHD 204 Methods and Materials for Teaching Children** 2-2-3

This course introduces basic methods and materials used in teaching young children. Emphasis is placed on students compiling a professional resource file of activities used for teaching math, language arts, science and social studies concepts. Upon completion, students should be able to demonstrate basic methods of creating learning experiences using appropriate techniques, materials and realistic expectations.

**CHD 205 Program Planning for Educating Young Children** 3-0-3

This course is designed to give students practice in lesson and unit planning, writing behavioral objectives, and evaluating activities taught to young children. Emphasis is placed on identifying basic aspects of cognitive development and how children learn. Upon completion, students should be able to plan and implement developmentally appropriate curriculum and instructional practices based on knowledge of individual differences and the curriculum goals and content.

**CHD 206 Children's Health and Safety** 3-0-3

This course introduces basic health, nutrition and safety management practices for young children. Emphasis is placed on setting up and maintaining a safe, healthy environment for young children including specific procedures for infants and toddlers and procedures regarding childhood illnesses and communicable diseases. Upon completion, students should be able to prepare a healthy, safe environment, plan nutritious meals and snacks, and recommend referrals if necessary.

**CHD 207 Observing and Recording Behaviors of Young Children** 3-0-3

PREREQUISITE: CHD 201

This course will provide students information on child observations, portfolio building, observation documentation, and various recording techniques, as well as a review of child development principles. Students will also be given guidance for the appropriate use of assessment materials and ways to support and work with families. Course may include practice in documenting observations.

**CHD 208 Administration of Child Development Programs** 3-0-3

This course includes appropriate administrative policies and procedures relevant to preschool programs. Topics include local, state and federal regulations; budget planning; record keeping; personnel policies and parent involvement. Upon completion, students should be able to identify elements of a sound business plan, develop familiarity with basic record-keeping techniques, and identify elements of a developmentally appropriate program.

**CHD 209 Infant and Toddler Education Programs** 3-0-3

This course focuses on child development from infancy to thirty months of age with emphasis on planning programs using developmentally appropriate material. Emphasis is placed on positive ways to support an infant's social, emotional, physical and intellectual development. Upon completion, students should be able to plan an infant-toddler program and environment which is appropriate and supportive of the families and the children.

**CHD 210 Educating Exceptional Young Children** 2-2-3

This course explores the many different types of exceptionalities found in young children. Topics include speech, language, hearing and visual impairments; gifted and talented children; mental retardation; emotional, behavioral, and neurological handicaps. Upon completion, students should be able to identify appropriate strategies for working with young exceptional children.

**CHD 211 Child Development Seminar** 2-0-2

A selection of topics relating to young children are addressed in this course. Subject matter will vary according to industry and student needs. Upon completion, students should demonstrate competencies designed to assess course objectives.

**CHD 212 Child Development Associate Seminar** 2-2-3

This course includes topics from competency areas required for individuals working toward or renewing CDA credentials. Industry needs determine course topics. Upon completion, students should demonstrate competency in meeting course objectives.

**CHD 214 Families and Communities in Early Care and Education Programs** 2-2-3

This course provides students with information about working with diverse families and communities. Students will be introduced to family and community settings, the importance of relationships with children, and the pressing needs of today's society. Students will study and practice techniques for developing these important relationships and effective communication skills.

**CHD 215 Supervised Practical Experience in Early Childhood Education** 0-6-3

PREREQUISITE: Permission of the instructor.

This course provides a minimum of 90 hours of hands-on, supervised experience in an approved program for young children. Emphasis is placed on performance of daily duties which are assessed by the college instructor and the cooperating teacher. Upon completion, students should be able to demonstrate competency in a child care setting.

## Computer Science (CIS)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

### **CIS 096 Introduction to Computers** 3-0-3

This course is designed to introduce students to basic computer terminology, hardware, input/output devices, memory, and processing. Students will learn basic keyboarding skills in addition to learning how to manage files. Windows as a graphical user interface operations and applications that use the Windows environment are emphasized.

### **CIS 110 Introduction to Computer Logic and Programming** 3-0-3

This course includes logic, design and problem solving techniques used by programmers and analysts in addressing and solving common programming and computing problems. The most commonly used techniques of flowcharts, structure charts, and pseudocode will be covered and students will be expected to apply the techniques to designated situations and problems.

### **CIS 111 Word Processing Software Applications** 3-0-3

This course provides students with hands-on experience using word processing software. Students will develop skills common to most word processing software by developing a wide variety of documents. Emphasis is on planning, developing, and editing functions associated with word processing.

### **CIS 113 Spreadsheet Software Applications** 3-0-3

This course provides students with hands-on experience using spreadsheet software. Students will develop skills common to most spreadsheet software by developing a wide variety of spreadsheets. Emphasis is on planning, developing, and editing functions associated with spreadsheets.

### **CIS 115 Presentation Graphics Software Applications** 3-0-3

This course provides students with hands-on experience using presentation graphics software. Students will develop skills common to most presentation graphics software by developing a wide variety of presentations. Emphasis is on planning, developing, and editing functions associated with presentations.

### **CIS 117 Database Management Software Applications** 3-0-3

This course provides students with hands-on experience using database management software. Students will develop skills common to most database management software by developing a wide variety of databases. Emphasis is on planning, developing, and editing functions associated with database management.

### **CIS 146 Microcomputer Applications** 3-0-3

This course is an introduction to the most common microcomputer software applications. These software packages should include typical features of applications, such as word processing, spreadsheets, database management, and presentation software. Upon completion, students will be able to utilize selected features of these packages. This course will help prepare students for the MOS and IC<sup>3</sup> certification. This course or an equivalent is CORE for the AAT and AAS CIS programs.

### **CIS 147 Advanced Microcomputer Applications** 3-0-3

**PREREQUISITE:** CIS146 or permission of instructor  
This course is a continuation of CIS 146 in which students utilize the advanced features of topics covered in CIS 146. Advanced functions and integration of word processing, spreadsheets, database, and presentation packages among other topics are generally incorporated into the course and are to be applied to situations found in society and business. Upon completion, the student should be able to apply the advanced features of selected software appropriately to typical problems found in society and business. This course will help prepare students for the MOS certification.

### **CIS 148 Post Advanced Microcomputer Applications** 3-0-3

**PREREQUISITE:** CIS147  
This course builds on concepts associated with various microcomputer applications with emphasis on advanced features commonly found in software applications. Advanced features of word processing, spreadsheets, database, and presentation packages are introduced. Features such as macros, Visual Basic Applications, and online features are included in the content of the course. Upon completion, the student will be able to apply the advanced features of selected software to the workplace. This course will help prepare students for the MOS certification.

### **CIS 149 Introduction to Computers** 3-0-3

This course is an introduction to computers and their impact on society. The course covers the development of computers, their impact on society, as well as future implications of development of computer and related communication technologies. This course introduces programming and computer operating systems. Upon completion, students will have basic knowledge of computer technology and will be able to perform basic functions with a computer system. The course will help prepare students for the IC<sup>3</sup> certification.

### **CIS 151 Graphics for the World Wide Web** 3-0-3

**PREREQUISITE:** CIS146  
This course will provide an overview to the theory, tools, and techniques necessary for creating high-quality graphics using design software tools. This course may be substituted with CAT 150 Imaging I: Principles of Photography and Introduction to Photoshop and CAT 180 Imaging II: Techniques of Photoshop and Painter or equivalent.

**CIS 160 Multimedia for the World Wide Web** 3-0-3  
PREREQUISITE: CIS146

This course covers contemporary, interactive multimedia technology systems, focusing on types, applications, and theories of operation. In addition to the theoretical understanding of the multimedia technologies, students will learn how to digitize and manipulate images, voice, and video materials, including authoring a web page utilizing multimedia.

**CIS 185 Computer Ethics** 3-0-3  
This course will survey the various issues surrounding computer ethics.

**CIS 189 Co-op for CIS I** 3-0-3  
This course is part of a series wherein the student works in a degree/program related job. Emphasis is placed on student's work experience as it integrates academic knowledge with practical application through exposure to computer practices in informational technologies environment. The grade is based on the employer's evaluation of each student's productivity, content of a descriptive report submitted by the student, and student development and assessment of a learning contract.

**CIS 191 Intro to Computer Programming Concepts** 3-0-3  
PREREQUISITE: MTH100 or permission of instructor  
This course introduces fundamental concepts, including an algorithmic approach to problem solving via the design and implementation of programs in selected languages. Structured programming techniques involving input/output, conditional statements, loops, files, arrays and structures and simple data structures are introduced. Students are expected to write programs as part of this course.

**CIS 199 Network Communications** 3-0-3  
PREREQUISITE: CIS268 and CIS269  
This course is designed to introduce students to the basic concepts of computer networks. Emphasis is placed on gaining an understanding of the terminology and technology involved in implementing networked systems. The course will cover the OSI and TCP/IP network models, communications protocols, transmission media, networking hardware and software, LANs (Local Area Networks) and WANs (Wide Area Networks), Client/Server technology, the Internet, Intranets and network troubleshooting. Upon completion of the course, students will be able to design and implement a computer network. Students will create network shares, user accounts, and install print devices while ensuring basic network security. They will receive hands-on experience building a mock network in the classroom. This course will help prepare students for the CCNA and Network + certifications. This is a CORE course for the AAT, AAS CIS programs. CIS 161 or CIS 273 may be used as a suitable substitute for this course.

**CIS 203 Introduction to the Information Highway** 3-0-3  
PREREQUISITE: CIS146  
This course introduces the student to the basic principles of the information highway. Students will be exposed to different network information tools such as electronic mail, network news, gophers, the World Wide Web, browsers, commercial information services and the use of appropriate editors or software to introduce construction of Web environments.

**CIS 205 Control Language and Utilities Applications** 3-0-3  
PREREQUISITE: CIS241 or permission of instructor.

This course introduces computer operation and the job or executive language on a mini- or mainframe computer using both batch and on-line techniques. Utilities including sorts, screen design aids, and control programs while operating system concepts such as scheduling are introduced. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.

**CIS 206 Advanced Control Language** 3-0-3  
PREREQUISITE: CIS205  
This course covers the advanced use of Control Language Commands used to control system functions. Display files, queries, functions and conditional logic are covered and used in practical applications.

**CIS 207 Introduction to Web Development** 3-0-3  
PREREQUISITE: CIS146  
At the conclusion of this course, students will be able to use specified markup languages to develop basic Web pages.

**CIS 208 Intermediate Web Development** 3-0-3  
PREREQUISITE: CIS207  
This course builds upon basic skills in Web authoring. Various Web authoring tools are introduced. Upon completion students will be able to use these tools to enhance Web sites.

**CIS 209 Advanced Web Development** 3-0-3  
PREREQUISITE: CIS208  
This is an advanced Web design course emphasizing the use of scripting languages to develop interactive Web sites. Upon completion students will be able to create data driven Web sites. This course helps prepare students for the Certified Internet Webmaster (CIW) Foundations certification.

**CIS 212 Visual Basic Programming** 3-0-3  
PREREQUISITE: CIS146 or College Algebra  
This course emphasizes BASIC programming using a graphical user interface. The course will emphasize graphical user interfaces with additional topics on such topics as advanced file handling techniques, simulation, and other selected areas. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.

**CIS 213 Advanced Visual Basic Programming** 3-0-3  
PREREQUISITE: CIS212  
This course is a continuation of CIS 212, Visual Basic Programming.

**CIS 222 Database Management Systems** 3-0-3  
This course will discuss database system architectures, concentrating on Structured Query Language (SQL). It will teach students how to design, normalize and use databases with SQL, and to link those to the Web.

**CIS 223 Three Dimensional Computer Modeling** 3-0-3  
This course is a study in 3D computer modeling and 3D painting beginning with primitive shapes and creating compelling 3D objects for use in model libraries, games, print material, web sites, visual simulation, and architectural applications. Powerful operations for modeling and 3D painting are incorporated into an interface that is simple and intuitive to use.

- CIS 224 Three Dimensional Computer Animation** 3-0-3  
This course is a study in 3D computer animation. Course contents include a review of 3D modeling, rendering the 3D animations, compositing and special effects for both video and digital editing, video and film recording, storyboarding and sound design, technical testing and production estimates and scheduling.
- CIS 231 Fortran Programming** 3-0-3  
PREREQUISITE: MTH100 and a previous computer science course or equivalent  
This course introduces fundamental concepts of the programming language FORTRAN. Topics included are mathematical and relational operators, branching, the use of input devices, arrays, subprograms, and introductory file and disk operation. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 241 Introduction to RPG Programming** 3-0-3  
PREREQUISITE: CIS146 or CIS110 or equivalent  
This course introduces the fundamental concepts of RPG (Report Program Generator). It includes such topics as report preparation, control breaks, and file processing. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 242 Intermediate RPG Programming** 3-0-3  
PREREQUISITE: CIS241  
This course is a continuation of CIS 241; includes such topics as sequential and random access file processing techniques. It may cover many of the structured programming commands, externally described files, display files, and other capabilities unique to some versions of RPG. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 243 Advanced RPG Programming** 3-0-3  
PREREQUISITE: CIS242  
This course provides enhanced use of externally described physical, logical, and display files in interactive processing. Special instructions are directed toward the use and coding of Subfile Programs. Students enrolled in this course are expected to spend two practice hours per week in the computer laboratory.
- CIS 249 Microcomputer Operating Systems** 3-0-3  
PREREQUISITE: CIS146 or permission of instructor  
This course provides an introduction to microcomputer operating systems. Topics include a description of the operating system, system commands, and effective and efficient use of the microcomputer with the aid of its system programs. Upon completion, students should understand the function and role of the operating system, its operational characteristics, its configuration, how to execute programs, and efficient disk and file management.
- CIS 250 E-Commerce** 3-0-3  
PREREQUISITE: CIS146 or permission of instructor  
This course is an introduction into e-commerce. Topics include marketing, building an e-commerce store, security, and electronic payment systems. Upon completion students will be able to build an e-commerce presence.
- CIS 251 C++ Programming** 3-0-3  
PREREQUISITE: CIS110 or equivalent  
This course is an introduction to the C++ programming language including object oriented programming. Topics include: problem solving and design; control structures; objects and events; user interface construction; and document and program testing.
- CIS 252 Advanced C++ Programming** 3-0-3  
PREREQUISITE: CIS251  
This course is a continuation of C++ programming. Techniques for the improvement of application and systems programming will be covered and other topics may include memory management, C Library functions, debugging, portability, and reusable code. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 255 JAVA Programming** 3-0-3  
PREREQUISITE: CIS146  
This course is an introduction to the Java programming language. Topics in this course include object-oriented programming constructs, Web page applet development, class definitions, threads, events and exceptions. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 256 Advanced JAVA** 3-0-3  
PREREQUISITE: CIS255  
This course is a second course of a sequence using the Java programming language. Topics include: Sun's Swing GUI components, JDBC, JavaBeans, RMI, servlets, and Java media framework. Upon completion, the student will be able to demonstrate knowledge of the topics through programming projects and appropriate exams.
- CIS 261 COBOL Programming** 3-0-3  
PREREQUISITE: Previous CIS course  
This course is an introduction to the COBOL programming language. Included are structured programming techniques, report preparation, arithmetic operations, conditional statements, group totals, and table processing. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.
- CIS 262 Advanced COBOL Programming** 3-0-3  
PREREQUISITE: CIS261  
This course consists of development, completion, testing, and execution of complex problems in COBOL using various data file structures. A structured approach will be implemented as a methodological system. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.

**CIS 264 Business Applications** 3-0-3

PREREQUISITE: CIS243 and CIS206

Prior programming training is put to use in implementing a practical business application such as accounts receivable, accounts payable, payroll, or other business system. A different application is selected each semester. Instructor will provide student with the necessary data and the student will create all the programs that are necessary to produce the expected results. This course will require outside laboratory time to produce programs for evaluation. Mastery of the language selected for the study, at the desired level, is required.

**CIS 268 Software Support** 3-0-3

PREREQUISITE: CIS146

This course provides students with hands-on practical experience in installing computer software, operating systems, and trouble-shooting. The class will help to prepare participants for the A+ Certification sponsored by CompTIA. This course is a suitable substitute for CIS 239, Networking Software.

**CIS 269 Hardware Support** 3-0-3

PREREQUISITE: CIS146

This course provides students with hands-on practical experience in installation and troubleshooting computer hardware. The class will help to prepare participants for the A+ Certification sponsored by CompTIA. This is a suitable substitute for CIS 240, Networking Hardware.

**CIS 276 Server Administration** 3-0-3

This course introduces network operating system administration. Topics included in this course are network operating system software installation, administration, monitoring, and maintenance; user, group, and computer account management; shared resource management; and server hardware management. Students gain hands-on experience in managing and maintaining a network operating system environment.

**CIS 280 Network Security** 3-0-3

This course provides a study of threats to network security and methods of securing a computer network from such threats. Topics included in this course are security risks, intrusion detection, and methods of securing authentication, network access, remote access, Web access, and wired and wireless network communications. Upon completion, students will be able to identify security risks and describe appropriate counter measures.

**CIS 281 System Analysis and Design** 3-0-3

PREREQUISITE: Any advanced programming course

This course is a study of contemporary theory and systems analysis and design. Emphasis is placed on investigating, analyzing, designing, implementing, and documenting computer systems. Upon completion, the student will be able to demonstrate knowledge of the topics through the completion of programming projects and appropriate tests.

**CIS 282 Computer Forensics** 3-0-3

This course introduces students to methods of computer forensics and investigations. This course helps prepare students for the International Association of Computer Investigative Specialists (IACIS) certification.

**CIS 284 CIS Internship** 3-0-3

PREREQUISITE: Permission of instructor

This course is designed to provide the student with an opportunity to work in a degree/program related environment. Emphasis is placed on the student's "real world" work experience as it integrates academics with practical applications that relate meaningfully to careers in the computer discipline. Significance is also placed on the efficient and accurate performance of job tasks as provided by the "real world" work experience. Grades for this course will be based on a combination of the employer's evaluation of the student, and the contents of a report submitted by the student. Upon completion of this course, the student should be able to demonstrate the ability to apply knowledge and skills gained in the classroom to a "real world" work experience.

**CIS 285 Object Oriented Programming** 3-0-3

PREREQUISITE: CIS251 or Permission of instructor

This course is an advanced object-oriented programming course and covers advanced program development techniques and concepts in the context of an object-oriented language, such as C++ or Java. Subject matter includes object-oriented analysis and design, encapsulation, inheritance, polymorphism (operator and function overloading), information hiding, abstract data types, reuse, dynamic memory allocation, and file manipulation. Upon completion, students should be able to develop a hierarchical class structure necessary to the implementation of an object-oriented software system.

**CIS 287 SQL Server** 3-0-3

This course will provide students with the technical skill required to install, configure, administer and troubleshoot SQL Server client/server database management system. At the completion of this series students will be able to: identify the features of SQL Server and the responsibilities and challenges in system administration; identify the benefits of integrating SQL Server and setup clients for SQL Server; install and configure SQL Server; manage data storage using database devices and partition data using segments; manage the user accounts; manage user permissions; identify the various task scheduling and alerting abilities of SQL Executive; identify the concepts used in replication and implement replication of the data between two SQL Services; identify the types of backup and create backup devices; identify the factors effecting SQL Server performance and the need for monitoring and tuning; locate and troubleshoot problems that occur on the SQL Server.

**CIS 291 Case Study in Computer Science** 3-0-3

PREREQUISITE: CIS281 or Permission of instructor

This course is a case study involving the assignment of a complete system development project for analysis, programming, implementation, and documentation. Topics include planning system analysis and design, programming techniques, coding and documentation. Upon completion, students should be able to design, code, test and document a comprehensive computer information system.

**CIS 299 Directed Studies in Computer Science** 3-0-3

PREREQUISITE: Permission of instructor

This course allows independent study under the direction of an instructor. Topics to be included in the course material will be approved by the instructor prior to or at the beginning of the class. Upon completion, the student will be able to demonstrate knowledge of the topics as specified by the instructor.

**Computer Numerical Control (CNC)**

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CNC 227 Introduction to Statistical Process Control** 3-0-3

This is an introduction course in statistical process control of manufacturing processes. Topics include control charts, pareto diagrams, and cause-effect diagrams. Upon completion, students are expected to perform basic functions in analysis and control of manufacturing processes.

**CNC 230 Computer Numerical Control Special Topics** 0-3-1

This course is designed to allow students to work in the lab with limited supervision. The student is to enhance their proficiency levels on various CNC machine tools. Upon completion, students are expected to plan, execute, and present results of advanced CNC products.

**Communication Skills (COM)****+COM100 Introductory Technical English I** 3-0-3

PREREQUISITE: Satisfactory placement score.

This course is designed to enhance reading and writing skills for the workplace. Emphasis is placed on technical reading, job-related vocabulary, sentence writing, punctuation, and spelling with substantial focus on occupational performance requirements. Upon completion, students should be able to identify main ideas with supporting details and produce mechanically correct short writings appropriate to the workplace.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

**Cosmetology (COS)\***

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**COS 111 Cosmetology Science and Art** 3-0-3

COREQUISITE: COS 112 or permission of the instructor.

In this course, students are provided a study of personal and professional image, ethical conduct, sanitation, hair styling, and nail care. Topics include personal and professional development, bacteriology, decontamination, infection control, draping, shampooing, conditioning, hair shaping, and hair styling. Upon completion, students should be able to apply safety rules and regulations and write procedures for skills identified in this course.

**COS 112 Cosmetology Science and Art Lab** 0-9-3

COREQUISITE: COS 111 or permission of the instructor.

In this course, students are provided the practical experience for sanitation, shampooing, hair shaping, hairstyling, and nail care. Emphasis is placed on sterilization, shampooing, hair shaping, hairstyling, manicuring, and pedicuring. Upon completion, the student should be able to perform safety and sanitary precautions, shampooing, hair shaping, hairstyling, and nail care procedures.

**COS 113 Chemical Methodology** 1-5-3

COREQUISITE: COS 114 or COS 115, or permission of the instructor.

This course focuses on the theory of hair and scalp disorders, permanent waving, chemical relaxers, and the composition of the hair. Topics include disorders and analysis of the scalp and hair, permanent waving, chemical hair relaxing, and soft curling. Upon completion, the student should be able to write procedures for permanent waving and chemical relaxing, identify the composition of the hair, safety and sanitary precautions and steps for scalp and hair analysis as well as the disorders.

**COS 114 Chemical Methodology Lab** 0-9-3

COREQUISITE: COS 113 or permission of the instructor.

In this course, students are provided the practical experience of permanent waving, chemical relaxing, and hair analysis. Topics include permanent waving, chemical relaxing, soft curl, and scalp and hair analysis. Upon completion, the student should be able to analyze the scalp and hair and perform these chemical services using safety and sanitary precautions.

**COS 121 Colorimetry** 3-0-3

COREQUISITE: COS 122 or permission of the instructor.

In this course, students learn the techniques of hair coloring and hair lightening. Emphasis is placed on color application, laws, levels and classifications of color and problem solving. Upon completion, the student should be able to identify all phases of hair coloring and the effects of the hair.

**COS 122 Colorimetry Applications** 0-9-3

COREQUISITE: COS 121 or permission of the instructor.

In this course, students apply hair coloring and hair lightening techniques. Topics include consultation, hair analysis, skin test and procedures and applications of all phases of hair coloring and lightening. Upon completion, the student should be able to perform procedures for hair coloring and hair lightening.

**COS 123 Cosmetology Salon Practices** 0-9-3

This course is designed to allow students to practice all phases of cosmetology in a salon setting. Emphasis is placed on professionalism, receptionist duties, hair styling, hair shaping, chemical, and nail and skin services for clients. Upon completion, the student should be able to demonstrate professionalism and the procedures of cosmetology in a salon setting.

**COS 124 Salon Management** 3-0-3

This course is designed to develop job-seeking and entry-level management skills for the beauty industry. Topics include job seeking, leader and entrepreneurship development, business principles, business laws, insurance, marketing, and technology issues in the workplace. Upon completion, the student should be able to list job-seeking and management skills and the technology that is available for use in the salon.

**COS 125 Career and Personal Development** 1-5-3

This course provides the study and practice of personal development and career building. Emphasis is placed on building and retaining clientele, communication skills, customer service, continuing education, and goal setting. Upon completion, the student should be able to communicate effectively and practice methods for building and retaining clientele.

**COS 131 Esthetics** 3-0-3

COREQUISITE: COS 132 or permission of the instructor.

This course is the study of cosmetic products, massage, skin care, and hair removal, as well as identifying the structure and function of various systems of the body. Topics include massage, skin analysis, skin structure, disease and disorder, light therapy, facials, facial cosmetics, anatomy, and hair removal. Upon completion, the student should be able to state procedures for analysis, light therapy, facials, hair removal, and identify the structures, functions, and disorders of the skin.

**COS 132 Esthetics Applications** 0-9-3

COREQUISITE: COS 131 or permission of the instructor.

This course provides practical applications related to the care of the skin and related structure. Emphasis is placed on facial treatments, product application, skin analysis, massage techniques, facial make-up, and hair removal. Upon completion, the student should be able to prepare clients, assemble sanitized materials, follow procedures for product application, recognize skin disorders, demonstrate facial massage movement, cosmetic application, and hair removal using safety and sanitary precautions.

**COS 143 Hair Designs** 1-5-3

This course focuses on the theory and practice of hair designing. Topics include creating styles using basic and advanced techniques of back combing, up sweeps and braiding. Upon completion, students should be able to demonstrate the techniques and procedures for hair designing.

**COS 146 Hair Additions** 2-5-4

This course focuses on the practice of adding artificial hair. Topics include hair extension, weaving, and braiding. Upon completion, the student should be able to demonstrate the techniques and procedures for attaching human and synthetic hair.

**COS 151 Nail Care** 3-0-3

COREQUISITE: COS 152 or permission of the instructor.

This course focuses on all aspects of nail care. Topics include salon conduct, professional ethics, sanitation, nail structure, manicuring, pedicuring, nail disorders, and anatomy and physiology of the arm and hand. Upon completion, the student should be able to demonstrate professional conduct, recognize nail disorders and diseases, and identify the procedures for sanitation and nail care services.

**COS 152 Nail Care Applications** 0-9-3

COREQUISITE: COS 151 or permission of the instructor.

This course provides practice in all aspects of nail care. Topics include salon conduct, professional ethics, bacteriology, sanitation and safety, manicuring and pedicuring. Upon completion, the student should be able to perform nail care procedures.

**COS 153 Nail Art** 3-0-3

COREQUISITE: COS 154 or permission of the instructor.

This course focuses on advanced nail techniques. Topics include acrylic, gel, fiberglass nails, and nail art. Upon completion, the student should be able to identify the different types of sculptured nails and recognize the different techniques of nail art.

**COS 154 Nail Art Applications** 0-9-3

COREQUISITE: COS 153 or permission of the instructor.

This course provides practice in advanced nail techniques. Topics include acrylic, gel, fiberglass nails, and nail art. Upon completion, the student should be able to perform the procedures for nail sculpturing and nail art.

**COS 160 Image Projection** 0-9-3

This course includes the study of professionalism, personal development, and ethics related to skin care. Topics include practical applications for hygiene, care of the feet and nails, and human relations. Upon completion, the student will be able to project visual poise and demonstrate professionalism needed in customer service.

**COS 162 Special Topics in Cosmetology** 0-9-3

PREREQUISITE: Permission of the instructor.

This course is designed to survey current trends and developing technology for the cosmetology profession. Emphasis is placed on, but is not limited to, dependability, attitude, professional judgment, emerging trends, new styling techniques, and practical cosmetology skills. Upon completion, students should have developed new skills in areas of specialization for the cosmetology profession.

**COS 163 Facial Treatments** 3-0-3

This course includes all phases of facial treatments in the study of skin care. Topics include treatments for oily, dry, and special skin applications. Upon completion, students will be able to apply facial treatments according to skin type.

**COS 164 Facial Machine** 0-9-3

This is a course designed to provide practical experience using the vapor and facial machine with hydraulic chair. Topics include the uses of electricity and safety practices, machine and apparatus, use of the magnifying lamp, and light therapy. Upon completion the student will be able to demonstrate an understanding of electrical safety and skills in the use of facial machines.

**COS 165 Related Subjects Estheticians** 0-9-3

This course includes subjects related to the methods for removing unwanted hair. This course includes such topics as electrolysis information and definitions, safety methods of permanent hair removal, the practice of removal of superfluous hair, and the use of depilatories. Upon completion of this course, students will be able to apply depilatories and practice all safety precautions.

**COS 167 State Board Review** 0-9-3

Students are provided a complete review of all procedures and practical skills pertaining to their training in the program. Upon completion, the student should be able to demonstrate the practical skills necessary to complete successfully the required State Board of Cosmetology examination and entry-level employment.

**COS 168 Bacteriology and Sanitation** 3-0-3  
In this skin care course, emphasis is placed on the decontamination, infection control and safety practiced in the esthetics facility. Topics covered include demonstration of sanitation, sterilization methods and bacterial prevention. Upon completion, the student will be able to properly sanitize facial implements and identify non-reusable items.

**COS 169 Skin Functions** 0-9-3  
This course introduces skin functions and disorders. Topics include practical application for skin disorder treatments, dermabrasion, and skin refining. Upon completion of this course, the student will be able to demonstrate procedures for acne, facials and masks for deeper layers and wrinkles.

**COS 181 Special Topics** 0-9-3  
This course introduces the art of hair shaping. Topics include hair sectioning, correct use of hairshaping implements, and elevations used to create design lines. Upon completion of this course, the student should be able to demonstrate the techniques and procedures for creating hair designs.

**COS 182 Special Topics - Nail Science** 0-9-3  
These courses provide for instruction unique to various areas of the cosmetology industry. Emphasis is on meeting individual student needs.

**COS 190 Internship in Cosmetology** 0-5/15-3  
This course is designed to provide exposure to cosmetology practices in non-employment situations. Emphasis is on dependability, attitude, professional judgment, and practical cosmetology skills. Upon completion, the student should have gained skills necessary for entry-level employment.

**COS 191 Co-op** 0-5/15-3  
This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**COS 191B Co-op - Nail Technology** 0-5/15-3  
An elective course providing work experience as a Nail Technician. The student works a minimum of 15 contact hours each week in an area related to the student's program of study.

**COS 291B Co-op** 0-5/15-3  
This course is designed to provide work experience with a college-approved employer in an area related to Cosmetology. The student works a minimum of 15 contact hours each week. Emphasis is placed on integrating classroom learning with related work experience. Registration with the AL Board of Cosmetology for a student work permit is required. Documentation on tasks and work evaluation are submitted to college instructor.

## Cosmetology Instructor Training (CIT)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CIT 211 Teaching and Curriculum Development** 3-0-3  
PREREQUISITE: Licensed managing cosmetologist (1 year experience).

This course focuses on principles of teaching, teaching maturity, personality conduct, and the development of cosmetology curriculum. Emphasis is placed on teacher roles, teaching styles, teacher challenges, aspects of curriculum development, and designing individual courses. Upon completion, students should be able to describe the role of teacher, identify means of motivating students, develop a course outline, and develop lesson plans.

**CIT 212 Teacher Mentorship** 0-9-3  
PREREQUISITE: Licensed managing cosmetologist (1 year experience). COREQUISITE: CIT 211 or permission of the instructor.

This course is designed to provide the practice through working with a cosmetology instructor in a mentoring relationship. Emphasis is placed on communication, student assessment, and assisting students in the lab. Upon completion, students should be able to communicate with students, develop a course of study, and apply appropriate teaching methods.

**CIT 213 Lesson Plan Development** 3-0-3  
PREREQUISITE: Licensed managing cosmetologist (1 year experience). COREQUISITE: CIT 211, CIT 212, or permission of the instructor.

The course introduces students to methods for developing lesson plans. Emphasis is placed on writing lesson plans and on the four-step teaching plan. Upon completion, students should be able to write daily lesson plans and demonstrate the four-step teaching method.

**CIT 221 Lesson Plan Implementation** 0-9-3  
PREREQUISITE: Licensed managing cosmetologist (1 year experience).

This course is designed to provide practice in preparing and using lesson plans. Emphasis is placed on organizing, writing, and presenting lesson plans using the four-step teaching method. Upon completion, students should be able to prepare and present a lesson using the four step teaching method.

**CIT 222 Instructional Materials and Methods** 3-0-3  
PREREQUISITE: Licensed managing cosmetologist (1 year experience). COREQUISITE: CIT 223 or permission of the instructor.

This course focuses on visual and audio aids and materials. Emphasis is placed on the use and characteristics of instructional aids. Upon completion, students should be able to prepare teaching aids and determine their most effective use.

**CIT 223 Instructional Materials and Methods Applications** 0-9-3

PREREQUISITE: Licensed managing cosmetologist (1 year experience). COREQUISITE: CIT 222 or permission of the instructor.

This course is designed to provide practice in preparing and using visual and audio aids and materials. Emphasis is placed on the preparation and use of different categories of instructional aids. Upon completion, students should be able to prepare and effectively present different types of aids for use with a four-step lesson plan.

**Criminal Justice (CRJ)**

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**CRJ 100 Introduction to Criminal Justice** 3-0-3

This course surveys the entire criminal justice process from law enforcement to the administration of justice through corrections. It discusses the history and philosophy of the system and introduces various career opportunities.

**CRJ 110 Introduction to Law Enforcement** 3-0-3

This course examines the history and philosophy of law enforcement, as well as the organization and jurisdiction of local, state, and federal agencies. It includes the duties and functions of law enforcement officers.

**CRJ 116 Police Patrol** 3-0-3

This course studies the duties, and responsibilities of the uniformed police patrol. It emphasizes the importance of patrol functions and includes principles, methods, procedures and resources used in police patrol operations.

**CRJ 140 Criminal Law and Procedure** 3-0-3

This course examines both substantive and procedural law. The legal elements of various crimes are discussed, with attention to the Alabama Code. Areas of criminal procedure essential to the criminal justice professional are covered.

**CRJ 146 Criminal Evidence** 3-0-3

This course considers the origins of the law of evidence and current rules of evidence. Types of evidence, their definitions and uses are covered, as well as the functions of the court regarding evidence.

**CRJ 147 Constitutional Law** 3-0-3

This course involves constitutional law as it applies to criminal justice. It includes recent Supreme Court decisions affecting criminal justice professionals, such as right to counsel, search and seizure, due process and civil rights.

**CRJ 150 Introduction to Corrections** 3-0-3

This course provides an introduction to the philosophical and historical foundations of corrections in America. Incarceration and some of its alternatives are considered.

**CRJ 208 Introduction to Criminology** 3-0-3

This course delves into the nature and extent of crime in the United States, as well as criminal delinquent behavior and theories of causation. The study includes criminal personalities, principles of prevention, control, and treatment.

**CRJ 209 Juvenile Delinquency** 3-0-3

This course examines the causes of delinquency. It also reviews programs of prevention, and control of juvenile delinquency as well as the role of the courts.

**CRJ 216 Police Organization and Administration** 3-0-3

This course examines the principles of organization and administration of law enforcement agencies. Theories of management, budgeting, and various personnel issues are covered.

**CRJ 220 Criminal Investigation** 3-0-3

This course explores the theory and scope of criminal investigation. The duties and responsibilities of the investigator are included. The techniques and strategies used in investigation are emphasized.

**CRJ 280 Internship in Criminal Justice** 1/3-0-1/3

PREREQUISITE: Permission of the instructor. This course involves practical experience with a criminal justice agency under faculty supervision. Permission of the instructor is required. This course may be repeated with the approval of the department head.

**CRJ 290 Selected Topics - Seminar in Criminal Justice** 1/3-0-1/3

This course involves reading, research, writing, and discussion of selected subjects relating to criminal justice. Various contemporary problems in criminal justice are analyzed. This course may be repeated with approval from the department head.

**Design Engineering Technology (D&D)**

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**DDT 104 Basic Computer Aided Drafting and Design** 1-4-3

This course provides an introduction to basic Computer-Aided Drafting and Design (CADD) functions and techniques, using "hands-on" applications. Topics include terminology, hardware, basic CADD and operating system functions, file manipulation, and basic CADD software applications in producing softcopy and hardcopy.

**DDT 111 Fundamentals of Drafting and Design Technology** 1-4-3

This course serves as an introduction to the field of drafting and design and provides a foundation for the entire curriculum. Topics include safety, lettering, tools and equipment, geometric constructions, and orthographic sketching, and drawing.

**DDT 114 Industrial Blueprint Drawing** 3-0-3

This course provides students with basic blueprint reading for various industrial applications. Topics include orthographic projection, dimensions and tolerances, symbols, industrial applications, scales and notes. This course may be tailored to meet a specific industry need.

**DDT 115 Blueprint Reading for Machinists** 3-0-3  
This course provides the students with terms and definitions, theory of orthographic projection, and other information required to interpret drawings used in the machine trades. Topics include multiview projection, pictorial drawings, dimensions and notes, lines and symbols, and sketching. Upon completion, students should be able to interpret blueprint drawings used in the machine trades.

**DDT 116 Blueprint Reading for Construction** 3-0-3  
This course provides the students with terms and definitions, theory of orthographic projection, and other information required to interpret drawings used in the construction trades. Topics include multiview projection, dimensions and notes, lines and symbols, sketching, foundations plans, site plans, floor plans, elevations, sections, details, schedules, electrical plans and specifications. Upon completion, students should be able to interpret blueprint drawings used in the machine trades.

**DDT 117 Manufacturing Processes** 1-4-3  
This course in materials and processes includes the principles and methodology of material selection, application, and manufacturing processes. Emphasis is directed to solids to include material characteristics, castings, forging, and die assemblies. Upon completion, students should be able to discuss and understand the significance of materials' properties, structure, basic manufacturing processes, and express and interpret material specifications.

**DDT 118 Basic Electrical Drafting** 1-4-3  
This course covers the universal language of electrical drafting, including electrical lines, symbols, abbreviations, and notation. Emphasis is placed on typical components such as generators, controls, transmission networks, and lighting, heating, and cooling devices. Upon completion, students should be able to draw basic diagrams of electrical and electronic circuits using universally accepted lines and symbols.

**DDT 122 Advanced Technical Drawing** 1-4-3  
This course covers the methods of providing size description and manufacturing information for production drawings. Emphasis will be placed on accepted dimensioning and tolerancing practices including Geometric Dimensioning and Tolerancing for both the Customary English System and the ISO System. Upon completion, students should be able to apply dimensions, tolerances, and notes to drawings to acceptable standards, including Geometric Dimensioning and Tolerancing, and produce drawings using and specifying common threads and various fasteners, including welding methods.

**DDT 124 Basic Technical Drawing** 1-4-3  
This course covers sections, auxiliary views, and basic space geometry. Emphasis will be placed on the theory as well as the mechanics of applying sections, basic dimensioning, auxiliary views, and basic space geometry.

**DDT 125 Surface Development** 1-4-3  
This course covers surface intersections and developments. Emphasis is placed on the basic types of intersections using simple geometric forms. Upon completion, students should be able to draw common types of surface intersection and handle them simply as applications of the concepts learned in this class.

**DDT 126 Sections and Conventional Practice** 1-4-3  
This course provides techniques for representing more or less complicated interiors of parts that cannot be shown clearly by means of hidden lines. Topics include visualization and development of all standard sectional views, section lining, and associated conventional practices used by the drafter. Upon completion, students should be able to select appropriate sectional views to represent more or less complex interior detail and execute detailed drawings as selected using orthographic multiview projections and conventional practices.

**DDT 127 Intermediate Computer Aided Drafting and Design** 1-4-3  
PREREQUISITE: DDT 104, DDT 111, DDT 124 or permission of instructor.

This course covers intermediate-level concepts and applications of CADD. Emphasis will be placed on intermediate-level features, commands, and applications of CADD software.

**DDT 128 Intermediate Technical Drawing** 1-4-3  
PREREQUISITE: DDT 111, DDT 124 or instructor approval.  
This course is designed to develop a strong foundation in common drafting and design practices and procedures. Topics include dimensioning concepts and pictorial drawings.

**DDT 130 Fundamentals of Drafting for Related Trades** 3-0-3  
This course provides an overview of related technical trades drafting. Theory is covered within a broad range of drafting specialties including civil, structural, electrical, mechanical, and electronic drawing. Emphasis is placed on a basic understanding of what each of these fields require for graphic communication.

**DDT 131 Machine Drafting Basics** 1-4-3  
This course in machine drafting and design provides instruction in the largest specialty area of drafting in the United States, in terms of scope and job opportunities. Emphasis will be placed on the applications of multi-view drawings, including drawing organization and content, title blocks and parts lists, assembly drawings, detail drawings, dimensioning and application of engineering controls in producing industrial-type working drawings. Upon completion, students should be able to organize, layout, and produce industrial-type working drawings, including the application of title blocks, parts lists, assemblies, details, dimensions, and engineering controls.

**DDT 132 Architectural Drafting** 1-4-3  
This course in architectural design and drafting introduces basic terminology, concepts and principles of architectural design and drawing. Topics include design considerations, lettering, terminology; site plans, and construction drawings. Upon completion, students should be able to draw, dimension, and specify basic residential architectural construction drawings.

**DDT 133 Basic Surveying** 1-4-3  
This course covers the use of surveying instruments, mathematical calculations and the theory of land surveying. Topics include USGS benchmarks, measuring horizontal and vertical angles and distances, terms, and recording and interpreting field notes. Upon completion, students should be able to recognize benchmarks and measure, specify, and record field notes.

**DDT 134 Descriptive Geometry** 1-4-3  
This course is designed to teach the fundamental concepts of descriptive geometry through an emphasis on logical reasoning, visualization, and practical applications. Topics include orthographic projection, points and lines in space, auxiliary views, plane representation, intersecting and non-intersecting lines, piercing and intersecting planes, plane development, and calculations. Upon completion, students should be able to project and intersect points, lines, and planes, with their relationships in space, as well as develop surfaces of an object for fabrication purposes.

**DDT 139 Fundamentals of Drafting for Related Trades Lab** 0-6-3  
This course is a direct applications lab to the topics covered within DDT 130. Emphasis is placed on drawing accuracy utilizing each of the fields listed with DDT 130.

**DDT 150 Theory of Residential Drawing and Design** 3-0-3  
This course provides the theory of residential drawing and design. Topics include architectural styles, house design, site and space planning, environment, drawing requirements, construction materials and process, terminology, and specific types of drawings required to complete a full set of construction documents. Introductory, intermediate, and advanced topics are covered. Emphasis is placed on an understanding of the various issues and requirements essential to the field of residential drawing and design.

**DDT 155 Drawing for Residential Construction** 0-8-4  
This course is a direct applications lab to the topics covered within DDT 150. Emphasis is placed upon the production of quality construction documents.

**DDT 181 Special Topics in Drafting and Design Technology** 3-0-3  
These courses provide specialized instruction in various areas related to the drafting industrial. Emphasis is placed on meeting students' needs.

**DDT 182 Special Topics in Drafting and Design Technology** 3-0-3  
This course provides students with opportunities to apply drafting and design concepts.

**DDT 191 Drafting Internship** 0-3-1  
This course is designed for those who are involved in a structured employment situation that is directly related to the field of drafting and design and is coordinated with the drafting instructor. The student must spend at least 5 hours per week in an activity planned and coordinated jointly by the instructor and the employer. Upon completion, students should have gained valuable work experience in a well-planned, coordinated training/work situation.

**DDT 192 Drafting Internship** 0-4-2  
This course is limited to those who are involved in a structured employment situation that is directly related to the field of drafting and design and is coordinated with the drafting instructor. The student must spend at least 10 hours per week in an activity planned and coordinated jointly by the instructor and the employer. Upon completion, students should have gained valuable work experience in a well-planned, coordinated training/work situation.

**DDT 193 Drafting Internship** 0-6-3  
This course is limited to those who are involved in a structured employment situation that is directly related to the field of drafting and design and is coordinated with the drafting instructor. The student must spend at least 15 hours per week in an activity planned and coordinated jointly by the instructor and the employer. Upon completion, students should have gained valuable work experience in a well-planned, coordinated training/work situation.

**DDT 211 Intermediate Machine Drafting** 1-4-3  
This second course in machine drafting and design provides more advanced instruction in the largest speciality area of drafting. Topics include applications of previously developed skills in the organization and development of more complex working drawings, use of vendor catalogs and the [Machinery's Handbook](#) for developing specifications, and use of standardized abbreviations in working drawings.

**DDT 212 Intermediate Architectural Drafting** 1-4-3  
This second course in architectural design and drafting continues with more advanced and detailed architectural plans. Topics include floor construction and detailing, foundation, wall, and roof construction and detailing; use of standards manuals; perspective drawings; electrical plans; plumbing plans; and building materials, with emphasis on residential and some light commercial applications. Upon completion, students should be able to draw and specify advanced-level plans including various architectural details.

**DDT 213 Civil Drafting, Plat Maps** 1-4-3  
This course introduces the drafting practices, symbols, conventions, and standards utilized in civil engineering contract documents. Topics include site planning, land surveying, topographic surveys, along with civil terminology. Upon completion, students should be able to draw accurate plat maps giving legal descriptions of land parcels, draw simple site plans, and identify and use proper symbols and conventions on civil engineering drawings.

**DDT 214 Pipe Drafting** 1-4-3  
This course covers the theory and practical application needed to understand piping fundamentals as used in refineries and petrochemical plants. Topics include process and mechanical flow diagrams, plant equipment, isometric drawings, instrumentation symbols, pipe symbols, flanges, fittings, and applications of basic math and trigonometry. Upon completion, students should be able to demonstrate pipe drafting techniques and fundamentals in order to prepare working drawings used in refineries and the petrochemical industrial environment.

**DDT 215 Geometric Dimensioning and Tolerancing** 1-4-3  
This course is designed to teach fundamental concepts of size description by geometric methods including appropriate engineering controls. Emphasis is placed on the drawing and application of common geometric dimensioning and tolerancing symbols to engineering drawings as designated by the latest ANSI/ASME Standards. Upon completion, students should be able to use geometric dimensioning and tolerancing symbols in applying size information and manufacturing controls to working drawings.

**DDT 216 Design of Structural Wood Members** 3-0-3  
This course provides structural theory and rule-of-thumb design for structural wood members. Joists, beams, girders, rafters, posts, and columns are designed as related to residential and light commercial needs. Bending moment, shear, and slenderness ratios are discussed as well as code requirements and rule-of-thumb. Emphasis is placed upon competency.

**DDT 217 Building Codes, Ordinances, Zoning Restrictions and the A.D.A.** 3-0-3  
PREREQUISITE: Permission of the instructor.

This course provides an in-depth study of building codes, municipal ordinances, zoning restrictions, and compliance with the Americans With Disability Act as related to commercial drafting and design. Emphasis is placed upon working understanding of these topics.

**DDT 220 Intermediate Technical and Mechanical Drawing** 3-0-3

This course provides an intermediate to advanced theory of technical and mechanical drawing. Topics include threaded fasteners, tolerancing, manufacturing materials, computer numerical control (CNC) layout, cams, and specialty mechanical CAD programs. Both A.N.S.I./ and S/I standards are covered. Emphasis is placed on the comprehension of the theory of the subjects covered.

**DDT 221 Advanced Machine Drafting** 1-4-3

This third course in machine drafting and design covers the development of complex, advanced working drawings by applying previously developed skills. Topics include application of previously developed skills in the organization and development of complex, advanced-level working drawings, including sub-assemblies and a basic design problem. Upon completion, students should be able to organize, layout, and produce complex, advanced-level working drawings, including sub-assemblies and a basic design problem.

**DDT 222 Advanced Architectural Drafting** 1-4-3

This third course in architectural design and drafting continues with advanced architectural plans, including a slant toward light commercial construction. Topics include climate control plans, application of building codes, building materials and finish specifications, cost estimating, and bid specifications. Upon completion, students should be able to apply current techniques in producing advanced-level architectural plans, including residential and light commercial applications.

**DDT 223 Advanced Civil Drafting** 1-4-3

This course is designed to build on the concepts learned in Civil Drafting I and introduces the student to more complex projects and problems. Topics include but are not limited to profiles, staking plans, grading plans, utility plans, and civil detailing. Upon completion, students should be able to accurately draft the documents described previously.

**DDT 224 Structural Concrete Drafting** 1-4-3

This course is designed to develop the knowledge and skills necessary to understand the basic components and terminology of pre-cast and poured-in-place concrete structures. Emphasis is placed on pre-cast concrete framing plans, sections, fabrication and connection details, poured-in-place concrete foundations, floor systems, and bills of material. Upon completion, students should be able to construction engineering and shop drawings of concrete beams, column, floor, roof, and wall framing plans using the A.I.S.C. Manual and incorporating safety practices.

**DDT 225 Structural Steel Drafting** 1-4-3

This course covers the theory and practical applications necessary to understand the basic design and terminology of structural steel components used in light commercial buildings. Emphasis is placed on structural steel drafting techniques, bolted and welded connections, framing plans, sections, fabrication and connection details, and bills of material. Upon completion, students should be able to produce engineering and shop drawings incorporating standard shapes, sizes, and details using the A.I.S.C. Manual and incorporating safety practices.

**DDT 226 Technical Illustration** 1-4-3

This course provides the student with various methods of illustrating structures and machine parts. Topics include axonometric drawings; exploded assembly drawings; one point, two point, and three point perspectives, surface textures, and renderings. Upon completion, students should be able to produce drawings and illustrations using the previously described methods.

**DDT 227 Strength of Materials** 4-0-4

This course in statics and strength of materials includes the study of forces and how they act and react on bodies and structures. Topics include the effects of forces as found in structures and machines under conditions of equilibrium, how materials resist forces, strengths of common construction materials and structural components. Force systems such as parallel, concurrent, and non-current are studied in coplanar and non-coplanar situations are included. Upon completion, student should understand and be able to apply the principles of force in engineering drawings.

**DDT 228 Geographic Information Systems** 1-4-3

This course is designed as an introduction to the world of G.I.S. and what it's about and builds on the skills attained in Civil Drafting I and II. Emphasis will be placed on utilizing G.I.S. software in conjunction with a CAD program to produce "intelligent" maps tied to a database in solving complex projects and problems. Upon completion, students should be able to manipulate attributed objects drawn on CAD/GIS software and accurately produce basic G.I.S. drawings.

**DDT 229 Intermediate Technical and Mechanical Drawing Lab** 0-6-3

This course is a direct applications lab to the topics covered within DDT 220. Emphasis is placed on accuracy, line quality, and the importance of effective graphic communication as related to end-user applications.

**DDT 231 Advanced CAD** 2-3-3  
This course covers the advanced applications of CAD software to engineering projects in various applications, including architectural, civil, mechanical, and environmental engineering, with consideration for advanced physical and psychological principle of CAD. These principles will be applied toward CAD customization and programming principles, for the expressed purpose of increasing productivity and improving the performance of the CAD operator, thereby, making CAD much more productive in an engineering environment. Emphasis will be place on using intelligent CAD techniques to increase the quality of output. And, 3D modeling and rendering will be introduced. Upon completion, students should be able to apply advanced CAD techniques in solving complex problems related to all engineering applications.

**DDT 232 CAD Customization** 3-2-4  
This course introduces the various methods of customizing CAD software to meet individual or company needs. Topics include menu customizing, programing, custom command macros, script files, slides, and slide libraries. Upon completion, students should be able to customize and write menus, write programming routines, and write script files for the purpose of increasing the proficiency of the CAD operator.

**DDT 233 Three-Dimensional Modeling** 1-4-3  
This course provides instruction in 3D Design Modeling utilizing the 3D capabilities of CAD software. Emphasis is placed on 3D wire-frame, surface and solids modeling along with the development of 2D detail drawings from 3D models.

**DDT 234 3D Graphics and Animation** 3-2-4  
This course is design to challenge the imagination of the student in a 3-dimensional problem solving environment. The student will be given a basic introduction to the concepts of 3D design and animation then apply those concepts to a design project. Upon completion, students should be able to create and animate objects in a 3-dimensional environment.

**DDT 235 Specialized CAD** 2-4-4  
This course introduces alternative CAD application software and alternative platforms, and can serve as a means of introducing third party programs that work in conjunction with a specific CAD application. Topics include various Graphical User Interfaces (GUI's) and how to navigate them, as well as how to use a third party application to make working in a specific CAD package easier and more productive. Upon completion, students should be able to use more than one CAD software package to produce hardcopy and use third party software to make certain tasks easier with a specific CAD program.

**DDT 236 Design Project** 1-4-3  
This course is designed for advanced students who aspire to more advanced and specialized skills in one certain drafting area. Emphasis will be place on the student's ability to apply the principles learned in previous drafting classes in one special area, as approved by the instructor. The required project must be agreed upon by the instructor and the student, as well as how the work is to be accomplished. Upon completion, students should further reinforce previously learned concepts by applying engineering principles and controls to a personal design project.

**DDT 237 Current Topics in CAD** 1-4-3  
This course serves to introduce changing technology and current CAD subjects and software and the computing hardware needed to utilize new products. Topics include currents trends in how industries use CAD applications, new developments, improvements and progressions within specific CAD applications as well as the necessary hardware. Upon completion, students should be able to use more updated software in a specific CAD application and be more aware of improvements in CAD software and how to apply advancing technology in improving their CAD proficiency.

**DDT 238 Special Topics in CAD** 1-4-3  
This course in special CAD and multimedia topics covers special capabilities possible with CAD software, especially in conjunction with other graphical software, such as virtual "walk-throughs" or multimedia presentations. Topics include but are not limited to combining CAD software, image editing software, authoring software, and 3D software into one harmonious relationship to produce multimedia presentations. Upon completion, students should be aware of and understand how to utilize several software packages to produce multimedia presentations.

**DDT 239 Independent Studies** 0-8-4  
This course provides practical application of prior attained skills and experiences as selected by the instructor for the individual student. Emphasis is placed on applying knowledge from prior courses toward the solution of individual drafting and design problems. Upon completion, students should demonstrate the application of previously attained skills and knowledge in the solution of typical drafting applications and problems.

**DDT 240 Public Utility Drafting** 1-4-3  
This course is designed to develop the knowledge and skills necessary to understand the control and direction of public utility drafting. Emphasis is placed on drafting techniques, sections, fabrication and connection details, and bills of materials for fresh water, storm water, and waste water. Upon completion, students should be able to produce engineering and shop drawings, incorporating details using the A.I.S.C. manual and incorporating safety practices.

**DDT 249 Advanced CAD Applications** 0-6-3  
This course provides the theory of commercial drawing and design. Topics include legal issues, job expectations, the architect and the architectural office, the contractor and the office of the contractor, building officials, construction materials and process, fire resistance design, C.S.I. format, and contract documents. Emphasis is placed upon a thorough understanding of these topics.

**DDT 250 Theory of Commercial Drawing and Design** 3-0-3  
This course provides the theory of commercial drawing and design. Topics include legal issues, job expectations, the architect and the architectural office, the contractor and the office of the contractor, building officials, construction materials and process, fire resistance design, C.S.I. format, and contract documents. Emphasis is placed upon a thorough understanding of these topics.

**DDT 255 Drawing for Commercial Construction** 0-8-4  
This course is a direct applications lab to the topics covered within DDT 250. Emphasis is placed upon the production of quality construction document.

**DDT 261 Statics, Strengths, and Testing of Materials** 3-0-3  
This is an advanced course that provides the student with information on the theory and general principles of engineering design. The course is a study of forces, vectors, equilibrium, rigid body, structural analysis, friction, centroids, mechanical properties of material, stress, strain, moments, bending, shear, and deflection. The destructive and non-destructive testing of various materials is also introduced in this course.

**DDT 267 Co-op Elective** 0-5-1  
This course allows the student to work parallel in a job closely related to the student's major while attending college. The grade is based on the employer's evaluation of the student's productivity, an evaluation work report submitted by the student, and the student's learning contract.

**DDT 268 Co-op Elective** 0-10-2  
This course allows the student to alternate semesters of full-time work in a job closely related to the student's major with semesters of full-time school. The grade is based on the employer's evaluation of the student's productivity, an evaluation work report submitted by the student, and the student's learning contract.

**DDT 271 Co-op Elective** 0-(10-30) 0-(2-6)  
This course allows credit for substantial on-the-job experience within the field of Design Engineering Technology.

**DDT 284 Computer Aided Modeling I** 1-4-3  
This course is an introduction to computer-aided modeling (CAM). Topics include three-dimensional drawing, filters, three-dimensional coordinates, view ports, meshes, surfaces, projections, model space, and model ports. Upon completion, students should be able to draw and dimension the wire-frame model of an object using three-dimensional microcomputer techniques.

**DDT 285 Computer Aided Modeling II** 1-4-3  
This course is a continuation of DDT 284. Topics include projecting, model space, paper space, model views, external references, and solid modeling. Upon completion, students should be able to draw and dimension the diagrams necessary to clearly and completely describe an electronic network.

**DDT 286 Electronics CAD** 1-4-3  
Introduction to computer-aided drafting for electronics. Topics include block diagrams, electronics symbols, schematic diagrams, wiring diagrams, and printed circuits. Upon completion of this course a student will be able to draw and dimension the diagrams necessary to clearly and completely describe and electronic network.

**DDT 289 Process CAD** 1-4-3  
Introduction to computer-aided drafting for process control. Topics include process symbols, multiview process projections, P & I diagrams, and isometric process projections. Upon completion, students should be able to draw and dimension the plans necessary to clearly and completely describe a process-control network.

**DDT 290 Survey of Aerospace Technology** 3-0-3  
This course provides a survey of Aerospace technology including the history of spaceflight, propulsion, orbital mechanics, and the space environment. A discussion of unmanned spacecraft, and the manned space program is also included, as well as, debate about the future, with solid facts and some speculation about humankind's ventures in the final frontier.

## Economics (ECO)

**+ECO 231 Principles of Macroeconomics** 3-0-3  
This course is an introduction to macroeconomic theory, analysis, and policy applications. Topics include the following: scarcity, demand and supply, national income analysis, major economic theories concerning monetary and fiscal policies as stabilization measures, the banking system, and other economic issues or problems including international trade.

**+ECO 232 Principles of Microeconomics** 3-0-3  
This course is an introduction of the microeconomic theory, analysis, and applications. Topics include scarcity; the theories of consumer behavior, production and cost, markets, output and resource pricing, and international aspects of microeconomics.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Electrical Technology (ELT)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**ELT 111 Concepts of Direct Current** 3-6-5  
This course provides a study of basic concepts and application of direct current (DC). Specific topics include but are not limited to: an introduction to electrical theory, units of electrical measurement, DC electrical components, and constructing various types of DC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of common test equipment used to analyze and troubleshoot DC circuits and to prove the theories taught during classroom instruction.

**ELT 112 Concepts of Alternating Current** 3-6-5  
This course provides a study of basic concepts and application of alternating current (AC). Specific topics include but are not limited to: an introduction to AC electrical theory, AC electrical measurements, and constructing and measuring various types of AC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of various test equipment used to analyze and troubleshoot AC circuits.

**ELT 114 Residential Wiring Methods** 2-3-3  
This course is a study of residential wiring practices and methods, the NEC requirements and residential blueprint interpretations.

**ELT 115 Residential Wiring Methods II** 2-3-3

This course is a study of residential wiring practices and methods, the NEC requirements and residential blueprint interpretations.

**ELT 117 AC/DC Machines** 1-6-3

This course covers the theory and operation of DC motors single and three phase AC motors and the labs will reinforce this knowledge. Emphasis is placed on the various types of single and three phase motors, wiring diagrams, starting devices, and practical application in the lab.

**ELT 118 Commercial/Industrial Wiring I** 1-6-3

This course focuses on principles and applications of commercial and industrial wiring. Topics include, electrical safety practices, an overview of National Electric Code requirements as applied to commercial and industrial wiring, conduit bending, circuit design, pulling cables, transformers, switch gear, and generation principles.

**ELT 119 Concepts of Solid State Electronics** 3-6-5

This course is an introduction to semiconductor fundamentals and applications to the electronic devices. Course covers the basic operations and applications to include rectifier circuits, transistors, and thyristors. Coverage is given to safety, use, and care with hazardous materials and personal as well as material and environmental considerations. Upon completion students will be able to construct and test for proper operation of various types of solid state devices.

**ELT 121 Concepts of Digital Electronics** 3-6-5

This course provides instruction in digital electronics. Topics include: number systems and codes, a review of Boolean algebra, logic elements, digital circuits, programmable logic circuits, and memory and computing circuits. This course provides laboratory exercises to analyze, construct, test and troubleshoot digital circuits.

**ELT 122 Advanced AC and DC Machines** 2-3-3

This course focuses on single and three-phase motors and introduces students to DC motors. Emphasis is placed on field wiring various types of AC and DC motors, troubleshooting procedures, and utilization of test equipment. Upon completion, students should be able to explain, wire, troubleshoot, and test all types of AC and DC electric motors.

**ELT 132 Commercial/Industrial Wiring II** 2-3-3

This course is a continuation of ELT 118 and is all inclusive. Including the study of branch circuits, installation requirements for services, feeders and special equipment considerations including the NEC code requirements. Emphasis is placed on load calculations, conductors, service sizing, installation requirements, NEC code requirements, transformers, lighting, HVAC and special equipment considerations. Upon completion, students should be able to know how to size complete electrical commercial/industrial systems and know the NEC requirements for each system.

**ELT 209 Motor Controls I** 1-6-3

This course covers the use of motor control symbols, magnetic motor starters, running overload protection, push-button stations, sizing of magnetic motor starters and overload protection, and complex ladder diagrams of motor control circuits. Topics include sizing magnetic starters and overload protection, the use of push-button stations, ladder diagrams and magnetic motor starters in control of electric motors, wye-delta starting, part start winding, resistor starting and electric starting devices. Upon completion, students should be able to understand the operation of motor starters, overload protection, interpret ladder diagrams using push-button stations and understand complex motor control diagrams.

**ELT 212 Motor Controls II** 2-3-3

This course covers complex ladder diagrams of motor control circuits and the uses of different motor starting techniques. Topics include wye-delta starting, part start winding, resistor starting and electronic starting devices. Upon completion, the students should be able to understand and interpret the more complex motor control diagrams and understand the different starting techniques of electrical motors.

**ELT 213 Industrial Equipment** 2-3-3

This course is designed to give a general overview of the different types of equipment used in large commercial and industrial facilities. Topics covered include, but are not limited to the following: motor coupling and alignment, gears and pulleys, belts and chains, basic hydraulics, basic pneumatics, and other applications. The students will learn the techniques involved with each application and, where applicable, demonstrate their abilities with practical examples.

**ELT 219 Fluid Power Systems** 2-3-3

This course includes the fundamental concepts and theories for the safe operation of hydraulic and pneumatic systems used with industrial production equipment. Topics include the physical concepts, theories, laws, air flow characteristics, actuators, valves, accumulators, symbols, circuitry, filters, servicing safety, and preventive maintenance and the application of these concepts to perform work. Upon completion, students should be able to service and perform preventive maintenance functions on hydraulic and pneumatic systems.

**ELT 231 Programmable Controls I** 2-3-3

This state-of-the art course includes the fundamental principals of programmable logic controls (PLCs) including hardware and programming. Emphasis is placed on but not limited to the following: hardwiring associated with the PLC, different options available with most PLCs and basic ladder logic programming. Upon completion, students must demonstrate their ability by developing programs, loading programs into real world PLCs and troubleshooting the system if necessary.

**ELT 232 Programmable Controls II** 2-3-3

This state-of-the-art course includes the principles of PLC's including hardware, programming and program design. Emphasis is placed on, but not limited to the following: developing working programs, timers, counters, different special functions, and designing programs from existing hardwired systems. Upon completion, students must demonstrate their ability by developing programs, loading programs into real world PLCs and troubleshooting the system if necessary.

**ELT 242 Journeyman Master Prep Exam** 3-0-3  
This course is designed to help prepare a student to take either the Journeyman or Master Certification Exam. Emphasis is placed on review of electrical concepts and/or principles, practice tests, and test taking procedures. Upon completion, students should be able to pass the Journeyman/Masters Certifying Exam.

## Emergency Medical Services (EMS) (EMP)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**EMS 100 Cardiopulmonary Resuscitation I** 1-0-1  
This course provides students with concepts as related to areas of basic life support to include coronary artery disease, prudent heart living, symptoms of heart attack, adult one-and-two rescuer CPR, first aid for choking, pediatric basic life support, airway adjuncts, EMS system entry access, automated external defibrillation (AED), and special situations for CPR. Upon course completion, students should be able to identify situations requiring action related to heart or breathing conditions and effectively implement appropriate management for each condition. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 101 Cardiopulmonary Resuscitation II** 1-0-1  
PREREQUISITE: EMS 100 or program approval.  
This course provides students with a review of concepts learned in EMS-100. In addition, the course provides the student with theory and application of airway adjuncts as utilized with airway obstruction and maintenance as well as respiratory and cardiac arrest. Assessment and management of acute ischemic stroke will also be included. Upon course completion, students should be able to identify situations requiring action related to heart or breathing conditions and effectively implement appropriate management for these conditions. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 103 First Aid** 1-0-1  
PREREQUISITE: Current training in CPR or program approval.  
This course introduces students to initial first aid care. Topics include scene safety, universal precautions, activation of the EMS system, assessment, airway/breathing/circulation, shock/injuries/bleeding, medical emergencies, and altered level of consciousness. Upon course completion, students should have knowledge to manage various emergencies requiring first aid techniques.

**EMS 104 First Aid for Students of Health  
Related Professions** 1-0-1  
PREREQUISITE: Current training in CPR or program approval.  
This course is designed for students who plan to enter a health related profession and provides educational concepts related to first aid for various health disciplines. The course includes instruction in the emergency administration of oxygen, use of airway adjuncts, medication administration techniques, equipment for mechanical breathing, suctioning techniques, and automated external defibrillation (AED). Upon course completion, students should have the ability to recognize emergency situations requiring immediate action and appropriately manage these situations.

**EMS 105 First Responder** 3-0-3  
This course provides theory in emergency procedures as contained in the current National Standard Training Curriculum (NSTC) for the First Responder. The course is an introduction to the emergency medical services system and provides fundamentals for students to improve the quality of emergency care provided as the first person to an emergency scene until emergency medical services arrive. Completion of specific student competencies, as outlined in the current NSTC for the First Responder, are required for successful course completion.

**EMS 107 Emergency Vehicle Operator  
Ambulance** 1-0-1  
PREREQUISITE: Students must present a valid driver's license and program approval.  
The Emergency Vehicle Operator Course - Ambulance provides the student with training as contained in the current National Standard Training Curriculum (NSTC) for the Emergency Vehicle Operator Course (EVOC) Ambulance. The course provides the knowledge and skill practice necessary for individuals to learn how to safely operate all types of ambulances. Topics include introduction to the NSTC for ambulance operators; legal aspects of ambulance operation; communication and reporting; roles and responsibilities; ambulance types and operation; ambulance inspection, maintenance, and repair; navigation and route planning; basic maneuvers and normal operating situations; operations in emergency mode and unusual situations, special considerations in safety; and the run. Completion of specific student competencies, utilizing NSTC guidelines, are required for successful completion of this course. NOTE: To qualify for licensure status as an ambulance driver in the State of Alabama, students must successfully complete this course and meet additional requirements as required by the Alabama Department of Public Health.

**EMS 116 EMS Basic Theory and Lab** 6-2E-9  
PREREQUISITE: Admission to the EMT-Basic Program.  
This course is required to apply for certification as an EMT basic. This course provides students with insights into the theory and application of concepts related to the profession of emergency medical services. Specific topics include: EMS preparatory, airway maintenance, patient assessment, treating trauma patients, various medical procedures, treating infants and children, and various EMS operations. This course is based on the Emergency Medical Technician-Basic National Standard Curriculum.

**EMS 117 EMT Basic Clinical Competencies  
Related Injuries** 0-3P-1  
PREREQUISITE: Admission to the EMT-Basic Program.  
This course is required to apply for certification as an EMT basic. This course provides students with clinical education experiences to enhance knowledge and skills learned in the EMS 116, EMS Basic Theory and Lab. This course helps students prepare for the National Registry Exam.

**EMS 150 EMTBasic Refresher** 2-0-2  
 PREREQUISITE: Completion of an NSTC course for EMTBasic or program approval.  
 This course provides students with theory in review of the current National Standard Training Curriculum (NSTC) for the EMT-Basic. It also serves as a transition or bridge course when a new national curriculum is adopted. This course contains specific content areas as defined by the NSTC. Students are required to complete specific competencies, as outlined by the NSTC, for successful course completion.

**EMS 153 EMS Dispatcher** 3-0-3  
 PREREQUISITE: Program approval.  
 This course provides students with theory as contained in the National Training Curriculum (NSTC) for EMS Dispatcher. This course is designed to prepare EMS dispatcher personnel to operate a telecommunication base station for the purpose of receiving requests for emergency medical services and allocating community resources in response to such requests. Upon course completion, students should have an understanding of emergency medical services dispatch procedures and be able to effectively receive a call and dispatch appropriate personnel, utilizing a scenario in a simulated situation.

**EMS 190 EMT - Intermediate Refresher** 2-0-2  
 PREREQUISITE: Completion of an NSTC course for the EMTIntermediate.  
 This course provides students with a review of material contained in the National Standard Training Curriculum (NSTC) for the EMT-Intermediate. It also serves as a transition or bridge course when a new national curriculum is adopted. This course contains specific content areas as defined by the NSTC and the Alabama Department of Public Health. Students are required to complete specific competencies according to the NSTC for successful course completion.

**EMS 218 Supervised Studies in EMS - I** 1-0-1  
 This course offers various topics of interest and need in emergency medical services. The course is conducted and completed under faculty supervision and includes required student cognitive competencies. Upon course completion, students should have a greater understanding of their assigned course topic.

**EMS 219 Supervised Studies in EMS - II** 1-0-1  
 This course offers various topics of interest and need in emergency medical services. The course is conducted and completed under faculty supervision and includes required student cognitive competencies. Upon course completion, students should have a greater understanding of their assigned course topic.

**EMS 265 Paramedic Refresher** 3-0-3  
 PREREQUISITE: Completion of an NSTC course for the Paramedic or program approval.  
 This course provides students with a review of material contained in the current National Standard Training Curriculum (NSTC) for the Paramedic. It also serves as a transition or bridge course when a new national curriculum is adopted. This course contains specific content areas as defined by the NSTC. Students are required to complete specific competencies for successful course completion.

**EMS 266 Advanced CV Life Support Provider** 1-0-1  
 PREREQUISITE: Program approval.  
 The Advanced Cardiovascular Life Support Provider Course provides students with concepts related to advanced cardiovascular life support. Content areas include acute myocardial infarction, stroke, cardiovascular pharmacology, electrophysiology, various rhythm disturbances, and techniques of management of cardiovascular emergencies. The course is taught in accordance with national standards and requires specific student competencies. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 267 Basic Trauma Life Support Provider** 1-0-1  
 PREREQUISITE: LPN, R.N., Basic EMT, Paramedic, or program approval.  
 This course provides students with theory and demonstration in advanced trauma care and management. Content areas include mechanism of trauma, trauma assessment, airway - breathing-circulation management, trauma to various portions of the body, multiple system trauma, and load-and-go situations. The course is taught in accordance with national standards and requires specific student competencies. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 269 Pediatric Medical Life Support Provider** 1-0-1  
 PREREQUISITE: LPN, R.N., Intermediate EMT, Paramedic, or program approval.  
 This course provides students with theory and simulated case studies in pediatric care. Content areas include recognition of pediatric pre-arrest conditions; shock; basic life support; oxygenation and airway control; newborn resuscitation; essentials in pediatric resuscitation; dysrhythmia recognition and management; vascular access; and use of medications. This course is taught in accordance with national standards and requires specific student competencies. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 270 Advanced Neonatal Life Support Provider** 1-0-1  
 PREREQUISITE: R.N., Paramedic, or program approval.  
 This course provides students with theory and demonstration in advanced neonatal care. Content areas include physiology of a newborn; causes of arrest in the neonate; initial steps in the resuscitation to include thermal management, positioning, suctioning, and tactile stimulation; use of resuscitation equipment and procedures for resuscitation; chest compressions and special considerations; anatomy of the neonates airway and endotracheal intubation; and resuscitation medications. The course is taught in accordance with national standards and requires specific student competencies for successful course completion.

**EMP 189 Applied Anatomy and Physiology for the Paramedic** 4-0-4

PREREQUISITE: Admission to the EMT - Paramedic Program. This course introduces human anatomy and physiology and includes concepts related to basic chemistry; fluid, electrolyte, and acid-base balance; functions of cells, tissues, organs, and systems; pathophysiology; and associated medical terminology. Emphasis is placed on applying content to signs, symptoms, and treatments; and situations commonly seen by paramedics. Upon course completion, students should be able to demonstrate a basic understanding of the structure and function of the human body.

**EMP 191 Paramedic Preparatory** 2-0-2

PREREQUISITE: Admission to the EMT - Paramedic Program. COREQUISITE: Approved anatomy and physiology course(s). NOTE: HPS-110, Introduction to Health Care, may be substituted for this course.

This course introduces issues related to the practice of prehospital advanced life support as a career, with a focus on issues common to all health care professions. Content areas include: paramedic roles and responsibilities, well-being of the paramedic, illness and injury prevention, medical-legal-ethical issues, therapeutic communications, and medical terminology. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMT-Paramedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 192 Paramedic Operations** 2-2-3

PREREQUISITE: Admission to the EMT - Paramedic Program. COREQUISITE: Approved anatomy and physiology course(s). This course focuses on the operational knowledge and skills needed for safe and effective patient care within the paramedic's scope of practice. Content areas include: pathophysiology, life span development, ambulance operations, medical incident command, rescue awareness and operations, hazardous materials incidents, crime scene awareness, and Alabama EMS laws and rules. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMT-Paramedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 193 Patient Assessment and Management** 2-2-3

PREREQUISITE: Admission to the EMT - Paramedic Program. COREQUISITE: Approved anatomy and physiology course(s). This course provides the knowledge and skills needed to perform a comprehensive patient assessment, make initial management decisions, and to communicate assessment findings and patient care verbally and in writing. Content areas include: airway management, history taking, techniques of the physical examination, patient assessment, clinical decision making, communications, documentation, and assessment based management. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMTParamedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 194 Paramedic General Pharmacology** 1-2-2

PREREQUISITE: Admission to the EMT - Paramedic Program. COREQUISITE: Approved anatomy and physiology course(s). NOTE: HPS-104, General Pharmacology for the Health Sciences, may be substituted for this course.

This course introduces basic pharmacological agents and concepts, with an emphasis on drug classifications and the knowledge and skills required for safe, effective medication administration. Content areas include: general principles of pharmacology and pharmacologic pathophysiology; venous and intraosseous access techniques, the metric and apothecary system; computation of dosage and solution problems, administration of pharmacologic agents; and nasogastric tube placement. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMTParamedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 195 Advanced Trauma Management - A** 2-2-6

PREREQUISITE: EMP 193, EMP 194 or permission of the Program Director.

COREQUISITE: Approved anatomy and physiology course(s). This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for trauma patients. Content areas include the pathophysiology, assessment, and management of trauma as related to: trauma systems; mechanisms of injury; hemorrhage and shock; soft tissue injuries; burns; and head, facial, spinal, thoracic, abdominal, and musculoskeletal trauma. Theory and skills are applied to a variety of patient situations in the emergency department, operating room, intensive care unit, and other clinical settings, with a focus on patient assessments, advanced airway management, I.V./I.O. initiation and medication administration. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMT-Paramedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 198 Medical Patient Management I** 2-2-3

COREQUISITES: EMP 193, EMP 194 or permission of the Program Director. Approved anatomy and physiology course(s).

This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for specific medical conditions. Content areas include: pulmonology, neurology, gastroenterology, renal/urology, toxicology, hematology, environmental conditions, infectious and communicable diseases, abuse and assault, patients with special challenges, and acute interventions for the chronic care patient. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMT Paramedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 199 Cardiovascular Electrophysiology** 2-2-3  
 PREREQUISITE: Admission to the EMT - Paramedic Program.  
 COREQUISITE: Approved anatomy and physiology course(s).  
 This course introduces the cardiovascular system, cardiovascular electrophysiology, and electrocardiographic monitoring. Content areas include: cardiovascular anatomy and physiology, cardiovascular electrophysiology, electrocardiographic monitoring, rhythm analysis, and prehospital 12-lead electrocardiogram monitoring and interpretation. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMT-Paramedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 200 Medical Patient Management IIA** 2-2-6  
 COREQUISITE: EMP 193, EMP 194 or permission of the Program Director. Approved anatomy and physiology course(s).

This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for specific medical conditions. Content areas include: endocrinology, allergies and anaphylaxis, behavioral/psychiatric conditions, gynecology, obstetrics, neonatology, pediatrics, and geriatrics. Students integrate and reinforce the didactic and skills laboratory components of their education by performing basic and advanced life support assessments and skills on a variety of patient presentations and complaints in the clinical setting. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMTParamedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 203 Cardiovascular Patient Management** 2-2-3  
 PREREQUISITE: EMP 199, EMP 193, EMP 194

COREQUISITE: Approved anatomy and physiology course(s).  
 This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for specific cardiovascular conditions. Content areas include: assessment of the cardiovascular patient, pathophysiology of cardiovascular disease and techniques of management including appropriate pharmacologic agents and electrical therapy. Upon course completion, students will have demonstrated competency in those respective components of the National Standard Curriculum for the EMTParamedic and requirements set forth by the Alabama Department of Public Health. CORE

**EMP 204 Transition to Paramedic Practice** 2-2-3  
 PREREQUISITE: EMP 191, EMP 192, EMP 193, EMP 194, EMP 195, EMP 198, EMP 199, EMP 200.

COREQUISITE: Approved anatomy and physiology course(s).  
 This course is designed to meet additional state and local educational requirements for paramedic practice. Content may include: prehospital protocols, transfer medications, topics in critical care and transport, systems presentation, and/or national standard certification courses as dictated by local needs or state requirements. Upon course completion, students should have met all ancillary educational requirements set forth by the Alabama Department of Public Health and local employers.

**EMP 205 Paramedic Terminal Competencies** 1-2-2  
 PREREQUISITE: EMP 191, EMP 192, EMP 193, EMP 194, EMP 195, EMP 198, EMP 199, EMP 200, EMP 203.  
 COREQUISITE: EMP 204, EMP 206, approved anatomy and physiology course(s).

This course is designed to review the National standard Curriculum for the EMT-Paramedic and to assist students in preparation for the paramedic licensure examination. Emphasis is placed on validation of knowledge and skills through didactic review, skills lab performance, computer simulation and practice testing. Upon course completion, students should be sufficiently prepared to sit for the paramedic licensure examination. CORE

**EMP 206 Paramedic Field Preceptorship** 1-0-6  
 PREREQUISITE: EMP 191, EMP 192, EMP 193, EMP 194, EMP 195, EMP 198, EMP 199, EMP 200, EMP 203.

COREQUISITE: EMP 204, EMP 205, EMP 207, approved anatomy and physiology course(s).

This course provides field experiences in the prehospital setting with advanced life support EMS units. Under the direct supervision of a field preceptor, students synthesize cognitive knowledge and skills developed in the skills laboratory and hospital clinical to provide safe and effective patient care in the prehospital environment. Upon course completion, students should have refined and validated their patient care practices to provide safe and effective patient care over a broad spectrum of patient situations and complaints. CORE

**EMP 207 Paramedic Team Leader Preceptorship** 2-2-3

PREREQUISITE: EMP 191, EMP 192, EMP 193, EMP 194, EMP 195, EMP 198, EMP 199, EMP 200, EMP 203.

COREQUISITE: EMP 204, EMP 205, EMP 207, approved anatomy and physiology course(s).

This course is designed to evaluate student's ability to integrate didactic, psychomotor skills, clinical, and field internship instruction to serve as a competent entry-level paramedic. This final evaluative (rather than instructional) course focuses on students' professional attributes and integrative competence in clinical decision-making and team leadership in the prehospital setting. Upon course completion, students should have demonstrated adequate knowledge and skills, professional attitudes and attributes, clinical decisionmaking and team leadership abilities to effectively function as a competent entry-level paramedic. CORE

## Energy Conservation (ECT)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**ECT 241 Introduction to Energy Management** 1-5-3

This is an introductory course in energy management. Topics include compression principles, fan/air flow principles, energy conversions, conservation principles, and a survey of the micro computer control systems. Upon completion, students will be able to perform relevant calculations and apply energy management principles.

**ECT 242 Audit-Accounting Conservation** 2-3-3  
This is a survey course on auditing and accounting systems relative to energy costs. Topics include principles of auditing, accounting, conservation techniques, energy costing, with emphasis on gaining insight into energy cost reductions. Upon completion, students will be able to apply auditing and accounting principles as to determine means of efficient energy use.

**ECT 243 Basic Energy Management Systems** 2-3-3  
(ELT 231 PROGRAMMABLE CONTROLS I)  
This state-of-the art course includes the fundamental principles of programmable logic controls (PLCs) including hardware and programming. Emphasis is placed on hardwiring associated with the PLC, different options available with most PLCs and basic ladder logic programming. Upon completion, students would be able to develop energy management programs, load programs into PLCs and trouble-shoot the system.

**ECT 244 Energy Management Systems** 2-3-3  
(ELT 232 PROGRAMMABLE CONTROLS II)  
This state-of-the art course focuses on PLC hardware, programming and program design. Emphasis is placed on developing working programs, timers, counters, different special functions, and designing programs from existing hardwired systems. Upon completion, students should be able to develop energy management programs, load programs into PLCs and troubleshoot the system.

**ECT 252 Advanced Energy Management Systems** 2-3-3  
(ELT 233 APPLIED PROGRAMMABLE CONTROLLERS)  
This state-of-the art course covers the more advanced topics of PLCs. Emphasis is placed on, but not limited to the following: high speed devices, analog programming, designing complete working system, start-up and troubleshooting techniques and special projects. Upon completion, students must demonstrate their ability by developing energy management and other programs, loading such programs into PLCs and troubleshooting the system if necessary.

**ECT 253 Direct Digital Control** 2-3-3  
(ELT 221 ELECTRONICS FOR ELECTRICIANS I)  
This course introduces students to the basic principles of solid state electronic equipment as found in many electrical and motor control circuits. Emphasis is placed on fundamental concepts of diodes, transistors, FETs and MOSFETs as they are used in electrical control circuits. Upon completion, students should understand the basic operation of solid state components and be able to perform basic troubleshooting tasks.

**ECT 254 Test and Balance** 2-5-3  
(CR 205 SYSTEM SIZING AND AIR DISTRIBUTION )  
Principles of air conditioning is the study of air properties through psychrometrics. The study of psychrometrics lays the ground work for students to develop a basic understanding of air properties, how it acts and reacts under changing conditions. The psychrometric chart and problem solving are included in this course. Air flow and duct design will also be covered as part of this course. Upon completion, the student will be able to interpret psychrometrics charts, calculate cooling-heating capacity, and design duct systems.

## Engineering (EGR)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**EGR 100 Engineering Orientation** 1-0-1  
This course is designed to make beginning engineering students aware of the many facets of engineering, of their relation to society, and of the objectives of the engineering curriculum. It is designed to stimulate interest in engineering and student-instructor dialogue.

**EGR 125 Modern Graphics for Engineers** 3-0-3  
This course provides an introduction to manual and computer-assisted techniques of graphic communication employed by professional engineers. Topics include: lettering; instrumental and computer-aided drafting; technical sketching; orthographic projection; pictorial, sectional, and auxiliary views; and dimensioning.

**EGR 220 Engineering Mechanics - Statics** 3-0-3  
PREREQUISITE: PHY 213. COREQUISITE: MTH 217.  
This course includes vector algebra, force and moment systems, equilibrium of force systems, trusses, friction and property of surfaces.

## English (ENG)

**ENG 080 English Laboratory** 1-2/0/1-2  
This course, which may be repeated as needed, provides students with a laboratory environment where they can receive help from qualified instructors on English assignments at the developmental level. Emphasis is placed on one-to-one guidance to supplement instruction in English courses. A student's success in this course is measured by success in those other English courses in which the student is enrolled.

**ENG 092 Basic English I** 3-0-3  
This course is a review of basic writing skills and basic grammar. Emphasis is placed on the composing process of sentences and paragraphs in standard American written English. Students will demonstrate these skills chiefly through the writing of well-developed, multi-sentence paragraphs.

**ENG 093 Basic English II** 3-0-3  
PREREQUISITE: A passing grade of "C" or better in ENG 092 or an appropriate score on the placement test.  
This course is a review of composition skills and grammar. Emphasis is placed on coherence and the use of a variety of sentence structures in the composing process and on standard American written English usage. Students will demonstrate these skills chiefly through the writing of paragraph blocks and short essays. Must have a "C" or better to enroll in ENG 101. With a grade of C or above the students may enroll in ENG 101; with a grade below C the student must repeat the course.

**ENG 101 English Composition I** 3-0-3

PREREQUISITE: A grade of "C" or better in Eng 093; or appropriate English placement score and keyboarding skills or OAD 100.

English Composition I provides instruction and practice in the writing of at least six (6) extended compositions and the development of analytical and critical reading skills and basic reference and documentation skills in the composition process. English Composition I may include instruction and practice in library usage. Must have a "C" or better to enroll in ENG 102.

**ENG 102 English Composition II** 3-0-3

PREREQUISITE: A grade of "C" or better in ENG 101 or the equivalent.

English Composition II provides instruction and practice in the writing of six (6) formal, analytical essays, at least one of which is a research project using outside sources and/or references effectively and legally. Additionally, English Composition II provides instruction in the development of analytical and critical reading skills in the composition process. English Composition II may include instruction and practice in library usage.

**ENG 130 Technical Report Writing** 3-0-3

PREREQUISITE: ENG 101 or the equivalent.

This course provides instruction in the production of technical and/or scientific reports. Emphasis is placed on research, objectivity, organization, composition, documentation, and presentation of the report. Students will demonstrate the ability to produce a written technical or scientific report by following the prescribed process and format.

**+ENG 251 American Literature I** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a survey of American literature from its inception to the middle of the nineteenth century. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**+ENG 252 American Literature II** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a survey of American literature from the middle of the nineteenth century to the present. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**+ENG 261 English Literature I** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a survey of English literature from the Anglo-Saxon period to the Romantic Age. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**+ENG 262 English Literature II** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a survey of English literature from the Romantic Age to the present. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 271 World Literature I** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a study of selected literary masterpieces from Homer to the Renaissance. Emphasis is placed on major representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 272 World Literature II** 3-0-3

PREREQUISITE: ENG 102 or equivalent with a grade of "C" or better.

This course is a study of selected literary masterpieces from the Renaissance to the present. Emphasis is placed on major representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 299 Directed Studies in Language and Literature** 1/3-0-1/3

PREREQUISITE: Permission of the instructor.

This course, which may be repeated for credit so long as the topics differ, provides the student the opportunity to study an English-language or literary topic chosen by the student in consultation with the instructor. Emphasis is placed on the student's investigating the topic and reporting the results of the investigation. The student will demonstrate knowledge of the topic through either a written or an oral presentation.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Environmental Technology (EVT)

### +EVT 101 Introduction to Environmental Science and Technology 3-2-4

This course is a survey of modern environmental science. Topics include ecosystem processes, species strategies, social systems, community building, ecosystems stability, population ecology, individual adaptations, species diversity, and physical and chemical systems from geochemistry to soil science. Upon completion, students should be able to explain the interdependencies of the ecosystem of our planet.

### +EVT 105 Introduction to Occupational Safety and Health 3-0-3

This course provides an overview of the field of occupational safety and health technology. Topics include an overview of OSHA regulations, origins of occupational safety and health standards, safety and health process design, safety and health technology, and managing safety processes. Upon completion, students should be able to demonstrate occupational safety and health knowledge.

### +EVT 107 Environmental Health and Safety Assessments and Reporting 3-0-3

This course focuses on procedures in conducting environmental audits, legal issues, typical auditing problems, audit protocol, managing and critiquing an audit program, and dealing with small businesses during audit program. Emphasis is on problem areas in the workplace setting where potential violations of federal, state, and local laws could cause severe damage to an industry or company. Upon completion, students should be able to conduct environmental site assessments.

### +EVT 110 Introduction to Environmental Laws and Regulations 3-0-3

This course provides an overview of current federal laws and regulations that relate to the environment. Topics include laws and regulations relating to air, land, and water, such as the Clean Air Act, Clean Water Act, RCRA, Toxic Substance Control Act, the Federal Pesticide Acts, OSHA, CERCLA, and SARA. Information on Alabama specific law regulation by the Alabama Department of Environmental Management (ADEM) and obtaining permits is also presented. Upon completion, students should be able to explain methods and strategies to ensure regulatory compliance.

### +EVT 120 Introduction to HAZMAT and OSHA Regulations 3-0-3

This course provides a historical overview of the occupational, consumer, and environmental health and safety issues. Topics include applicable OSHA regulation and compliance strategies. Upon completion the student should be able to develop methods and strategies to ensure regulatory compliance with transportation and emergency response regulations regarding hazardous materials.

### +EVT 140 Hydrology 3-1-3

This course is an introduction to hydrology cycles. Topics include rainfall and runoff analysis, water-shed studies, overland flow and flood routing, sediment transport, and hydrologic forecast will be completed. Upon completion, students should be able to evaluate the interaction of water with the surrounding environment.

**+EVT 150 Hazmat Communication Training 3-0-3**  
This course is designed to provide instruction in the development and implementation of a hazard communication program for employees, the community, and emergency response personnel. Emphasis will be placed on employee "right to know" requirements. Upon completion, students should understand how to develop hazard communications programs.

**+EVT 160 Introduction to Air Pollution 3-1-3**  
This course will provide an introduction of air pollution dealing with effects, sources, combustion processes, abatement, and control technology. Subjects covered include: Air monitoring, sampling and air dispersion models, nature of problems, and approaches for solution of these problems. Upon completion, students should understand the causes and effects of air pollution.

**+EVT 201 Environmental Internship I 0-15-3**  
This course will provide work experience designed to familiarize students with the application of environmental technology principles. Efforts will be made to place students in an area which supports their career goals. Upon completion, students should have gained experience as an environmental technician.

**+EVT 202 Environmental Internship II 0-15-3**  
This course is a continuation of EVT 201. It will provide work experience designed to familiarize students with the application of environmental technology principles. Efforts will be made to place students in an area which supports their career goals. Upon completion, students should have gained experience as an environmental technician.

**+EVT 203 Environmental Permitting 3-0-3**  
This course is designed to teach a student environmental permitting procedures. Topics include documentation and application procedures, government, regulatory, and licensing organization, structure and protocol; title search, environmental audits, and water well surveys. Upon completion, students should be able to process permits and prepare technical correspondence and reports.

**+EVT 210 Environmental Sampling and Analysis 3-2-4**  
This course is designed to introduce students to the theory and practical methodology of the analysis of significant inorganic substances in different environmental sample matrices. Topics include sample acquisition, preservation, preparation, analysis and documentation according to approved EPA methods and guidelines. Quality assurance and quality control requirements will be stressed. Field and laboratory exercises will be completed to determine the composition for several selected inorganic substances. Upon completion, students should be able to perform environmental sampling and analysis.

**+EVT 220 Toxicology 3-0-3**  
This course is designed to familiarize students with acute and chronic health effects due to exposures with hazardous materials. Topics covered in this course include review of human physiology and recognition of physiological effects of toxic agents, concepts of TLV and LD, use of medical technology, modes of contact an entry of toxic agents, dose, time, and concentration effects, recognition of toxic agents, occupational diseases, and epidemiology. Upon completion, students will understand the effects of exposure to hazardous materials on the human body.

**+EVT 229 Ecology** 3-2-4  
Elementary concepts with focus on energetics, limiting factors, the process of adaptation to a changing environment, the niche, ecological pyramids and succession. The laboratory will consist of elementary concepts with focus on the niche, ecological pyramids and succession.

**+EVT 230 Pollution Prevention** 3-0-3  
Case studies are presented for understanding, communicating, and managing industrial manufacturing processes. This course includes examples of changing operating practices, materials substitution, process/product changes and recycling/reuse. Topics include how to develop a process flow diagram and material balances for a generic manufacturing facility, how to identify potential pollution prevention opportunities, and how to determine feasibility of various pollution plant. Upon completion students should be able to develop and evaluate pollution prevention plans.

**+EVT 250 Hazardous Waste Operations and Emergency Response** 4-0-4  
This course is an overview of emergency planning techniques for hazardous materials spills. Topics include the coordination and implementation of emergency response procedures, and first aid and CPR. Upon completion, students should be able to design and/or evaluate emergency response plans.

**+EVT 260 Introduction to Industrial Hygiene** 3-0-3  
This course focuses on laboratory and plant hazards. Topics include sampling techniques, hazard evaluation, control of airborne contaminants, ventilation, filter preparation and sampling, air quality, respiratory disease, and the use of appropriate laboratory and safety equipment. Upon completion, students will have a thorough knowledge of all areas of industrial safety.

**+EVT 280 Hazardous Materials Management** 3-1-3  
This course focuses on methods of hazardous waste minimization, recovery, destruction, and disposal. Topics include conservation, recycling, and safe disposal techniques for any hazardous material. Upon completion, students should be able to explain MSDS sheets and explain processes to minimize waste creation.

**+EVT 290 Workplace Analytical Methods** 3-1-3  
This course introduces sampling strategy and technique, analytical methods and measurements, and evaluation of gathered test data. Topics include wet chemistry, gas chromatography, high performance liquid chromatography, spectrophotometry, and other electroanalytical techniques. Upon completion, students should be able to read and interpret data from these sources and make presentations on cause and effect results from the data.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Fire Science (FSC)

**+FSC 100 Basic Firemanship** 2-0-2  
This course is an introduction to the basics of Fire Science, including fire chemistry salvage, hydraulics, laying hose, laddering, and overhaul work.

**+FSC 101 Introduction to the Fire Service** 3-0-3  
This course is a survey of the philosophy and history of fire protection, loss of property and life by fire, review of municipal fire defenses, and the organization and function of federal, state, county, city, and private fire protection.

**+FSC 103 Hazardous Materials I** 3-0-3  
This is a survey of fundamental facts and operations applicable to hazardous materials incidents. The emphasis is on storage, handling, standards, special equipment, toxicology, and monitoring.

**+FSC 104 Hazardous Materials II** 3-0-3  
This course is a continuation of the study of hazardous materials and application to specialized hazardous materials response teams. Emphasis is placed on specialized skills and equipment required to mitigate a hazardous materials incident.

**+FSC 105 Chemistry for the Fire Service** 3-0-3  
This is a survey of general chemistry as applied to the fire service. Emphasis is on fundamental facts, principles, theories, and applications.

**+FSC 111 Fire Hydraulics** 3-0-3  
This course is a review of basic mathematics, hydraulic laws and formulae as applied to the fire service, water supply problems and underwriters' requirement for pumps.

**+FSC 120 Fire Hazards** 3-0-3  
The course includes the characteristics and behavior of fire; fire-hazard properties of solid, liquid, and gas materials; and the storage and handling of these materials.

**+FSC 130 Introduction to Fire Suppression** 3-0-3  
This course is a study of fire suppression, organization, fire suppression equipment, characteristics and behavior of fire, and fire hazard properties of ordinary materials.

**+FSC 200 Fire Combat Tactics and Strategy** 3-0-3  
This course is a review of fire chemistry, equipment and manpower, basic fire fighting tactics and strategy, methods of attack and pre-planning fire problems.

**+FSC 205 Fire Instructor I** 3-0-3  
This course is a study of the instructor's roles and responsibilities; factors that influence the teaching/learning process; the techniques of planning, preparing, and presenting an effective lesson; training aids and their utilization; and the purpose and principles of testing and evaluation.

**+FSC 206 Fire Instructor II** 3-0-3  
This is a study of task and job analysis; behavioral/performance objectives; lesson plan and instructional material development; the teaching/learning process; methods of instruction and evaluation; and the use of references.

**+FSC 207 Fire Instructor III** 3-0-3  
This is a study of occupational analysis; development of course instructional materials, evaluations, and training records and reports.

**+FSC 210 Building Construction for the Fire Service** 3-0-3  
This course highlights and assesses the problems and hazards to fire personnel when a building is attacked by fire or is under stress from other factors dealing with collapse.

- +FSC 211 Building Construction and Related Codes** 3-0-3  
This course includes a thorough examination of national, state, and local laws and ordinances which regulate and/or influence the field of fire prevention.
- +FSC 220 Fire Extinguishment Agents** 3-0-3  
This is a study of water supplies and services, principles of hydraulic calculations and tests, fire extinguishing chemicals, and the selection and use of extinguishing agents.
- +FSC 230 The ISO (AIA) Standards** 3-0-3  
This course is a study of insurance theory and practice, the economics of the ISO grading system and a city's fire defense and insurance rates. Included is a detailed analysis of a city's water supply, fire department, fire alarm, fire prevention, and other grading methods of fire defense.
- +FSC 235 Breathing Apparatus Specialist Course** 3-0-3  
This is an in-depth survey of respiratory hazards; search and rescue techniques; emergency procedures; routine care and inspection procedures as related to the fire service. Extreme emphasis is placed upon understanding and handling personal and equipment limitations.
- +FSC 240 Fire Cause Determination** 3-0-3  
This course covers the burning characteristics of combustibles, interpretation of clues, burn patterns leading to points of origin, identification of incendiary indications, sources of ignition and ignited materials, and preservation of fire science evidence.
- +FSC 241 Arson Investigation** 3-0-3  
This is an introduction to arson and incendiarism, arson laws, methods of determining fire causes, evidence, interviewing and detaining witnesses, procedures in handling juveniles, and court procedures.
- +FSC 250 Fire Prevention Inspection** 3-0-3  
This is a study of the organization and function of the fire prevention team. Course content includes inspections, survey and mapping procedures, recognition of fire hazards, and public relations as affected by fire prevention.
- +FSC 260 Special Service Hazards** 3-0-3  
This is a study of electrical transmissions and related equipment appliances, radiation hazards, flammable metals, and riots, disaster and civil defense organizations, and hazard plans.
- +FSC 270 Fire Protection Systems** 3-0-3  
This is a study of portable fire extinguishing equipment, sprinkler systems, protection systems for special hazards, and fire alarms and detection systems.
- +FSC 280 Fire Apparatus and Equipment** 3-0-3  
This is a study of driving laws, techniques, construction and operation of pumping engines, ladder trucks, aerial platforms, specialized equipment and apparatus maintenance.
- +FSC 285 Industrial Fire Protection** 3-0-3  
This is an introduction to fire protection in industrial plants, which includes the study of practices and procedures involved in establishing and managing an in-plant fire protection plan.

- +FSC 292 Elements of Supervision/Fire Service Supervision** 3-0-3  
This course covers the responsibility of supervisors; organization, human relations, grievance training, rating, promotion, quality-quantity control and management-employee relations.
- +FSC 293 Fire Service Administration** 3-0-3  
This is a study of the principles, practices and objectives of fire administration; of fire defenses and insurance rates; of personal management, and of records, reports, and evaluation.
- +FSC 294 Fire Department Management** 3-0-3  
This is an introduction to planning, budgeting organization, staffing, evaluation, and public relations of fire departments.
- +FSC 297 Selected Topics in Fire Service Operations** 1/3-0-1/3  
This course provides directed reading and discussion of selected topics related to fire service operations. The course may be repeated for credit.
- +FSC 299 Legal Aspects of the Fire Service** 3-0-3  
This is an introduction to the overall legal duties and responsibilities and limitations placed upon the fire service professional. It includes the study and practical application of civil and criminal procedures based upon current state and federal codes.
- +Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Forestry (FOR)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

- FOR 100 Introduction to Forestry** 3-3-4  
This course provides a historical overview of forestry and forestry practices. Emphasis is placed on forest policies, career opportunities, basic silvicultural and mensurational practices and forest protection. The student should be able to make basic tree measurements, identify local tree species, and recognize best management practices in Alabama.
- FOR 101 Cartography** 1-4-3  
This course focuses on mapping as related to the forestry industry. Topics include county soil surveys, Public Land Survey System, map symbols, scales, declination, and use of staff compass, steel tape, and Abney level. Upon completion, students should have a working knowledge of maps and basic surveying techniques.
- FOR 120 Timber Harvesting** 2-3-3  
This course is a study of timber harvesting methods and equipment. Emphasis is placed on harvesting methods, laws and environmental regulations, and supervisory skills. Upon completion, students should be able to demonstrate a basic knowledge of timber harvesting, best management practices, and supervisory skills.

**FOR 130 Forestry Mathematics** 3-0-3  
 PREREQUISITE: MTH 131 or permission of the instructor.  
 This course covers basic mathematical concepts relative to future forestry courses. Topics included are ratios, percentages, functions, linear equations, graphing, trigonometric functions, finance and basic statistics. Upon completion, students should be able to apply basic finance and statistical principles to forestry problems, interpret graphical data, and set up and solve ration and proportion problems.

**FOR 210 Dendrology** 3-3-4  
 This course includes the field identification and study of scientific names, common names, tree growth habits, principal botanical features, and natural ranges of regionally-important trees. Topics include botanical terms, botanical features, species/site relationships, growth habits, common and scientific names, and dichotomous keys. Upon completion, students should be able to identify approximately 100 trees and shrubs, describe range and habitats for trees, and identify trees by scientific, family, and common names.

**FOR 270 Forest Fire Control/Use** 3-3-4  
 This is a study of forest fire behavior, wildfire suppression, for control organizations, and use of fire as a forest management tool. Topics include types of fire, benefits of fire, fire adapted ecosystems, prescribed fire techniques, wildfire control, smoke management, and fire plan preparation. Upon completion, students should be able to demonstrate a knowledge of weather, identify fuel types, compute fire danger ratings, measure fuel volume, demonstrate the use of forest fire fighting equipment, and develop a burning plan.

**FOR 281 Forest Mensuration** 3-3-4  
 PREREQUISITE: FOR 260 or permission of the instructor.  
 This course is a study of basic forest measurements. Topics include public land subdivision, cubic volume, board feet, volume tables, specialty products, simple statistics, and plot, strip, and variable timber cruising methods. Upon completion, students should be able to locate property based on legal descriptions, select appropriate volume tables for specific product classes, and summarize filed data using either fixed area or variable plot data.

## Geography (GEO)

**GEO 100 World Regional Geography** 3-0-3  
 This course surveys various countries and major regions of the world with respect to location and landscape, world importance, political status, population, type of economy, and its external and internal organization problems and potentials.

**+GEO 200 Geography of North America** 3-0-3  
 This course is a survey of the geography of the United States and Canada with special emphasis on land usage, mineral resources, industrial development, and social and economic adaptation of man and the natural environment.

**+GEO 201 Human Geography** 3-0-3  
 PREREQUISITE: GEO 100  
 A conceptual approach to the study of humans, their distribution, economic systems, behavior patterns, value systems and environmental perceptions, with emphasis given to the resulting patterns of cultural landscapes that characterize the earth.

**+GEO 220 Principles of Physical Geography** 3-0-3  
 PREREQUISITE: GEO 100.

This course is an introduction to natural features of the earth. It concentrates on weather, climate, soil, and vegetation associations, on landforms and on the forces that have been active in shaping the earth's surface.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Health Education (HED)

Availability of courses in this program is dependent upon student enrollment. Except for HED 226 and HED 231. See master schedule of classes or advisor for further information.

**HED 199 Ecological Approach to Health and Fitness** 3-0-3

This course examines a myriad of factors influencing health and fitness behavior. Intrapersonal, interpersonal, institutional, community and public policy factors are examined.

**HED 222 Community Health** 3-0-3

This course introduces principles and practices of community health; it includes drug use and abuse, communicable diseases, cardiovascular diseases, cancer, consumer health, health organization, and environmental concerns.

**HED 224 Personal and Community Health** 3-0-3

This course covers health problems for the individual and for the community. Areas of study include mental health, family life, physical health, chronic and degenerative diseases, control of communicable diseases, and the understanding of depressants and stimulants. Healthful living habits will be emphasized.

**HED 226 Wellness** 3-0-3

This course provides health-related education to those individual seeking advancement in the area of personal wellness. The course has 5 major components: (1) fitness and health assessment, (2) physical work capacity, (3) education, (4) reassessment and (5) retesting.

**HED 231 First Aid** 3-0-3

This course provides instruction to the immediate, temporary care which should be given to the victims of accidents and sudden illness. It also includes standard and advanced requirements of the American Red Cross, and/or the American Heart Association. CPR training also is included.

**HED 232 Care and Prevention of Athletic Injuries** 3-0-3

This course provides a study of specific athletic injuries, their treatment, and preventive measures.

**HED 266 Introduction to Health Occupations** 3-0-3

This course is designed to give students a general introduction to health occupations. Major emphasis is on the specialization area of each student enrolled.

**HED 267 Drug Education** 3-0-3

This course provides an examination of the drug scene with emphasis on the following: pharmacological, and sociological aspects of drug use; rehabilitation and treatment resources; and the law enforcement procedures.

**HED 277 CPR Recertification** 1-0-1  
In this course, instruction and review of undated information concerning cardiopulmonary resuscitation (CPR) is presented. The student must satisfactorily execute skills needed to meet requirements for recertification in Basic Cardiac Life Support (BCLS) as required by the American Heart Association.

## History (HIS)

**HIS 101 Western Civilization I** 3-0-3  
This course surveys the social, economic, and political developments which shaped the modern western world. This course covers history from the ancient world through the Reformation. It is offered fall, spring and summer.

**HIS 102 Western Civilization II** 3-0-3  
This course continues HIS 101. It surveys the development of the western world from the Reformation to the present. It is offered fall, spring and summer.

**HIS 201 United States History I** 3-0-3  
This course surveys United States history during colonial, Revolutionary, early national and antebellum periods. It concludes with the Civil War and Reconstruction.

**HIS 202 United States History II** 3-0-3  
This course is a continuation of HIS 201; it surveys United States history from the Reconstruction era to the present.

**+HIS 216 History of World Religions** 3-0-3  
This course presents a comparison of the major religions of the world from a historical perspective. Emphasis is placed on the origin, development, and social influence of Christianity, Judaism, Islam, Hinduism, Buddhism, and others. Offered spring semester.

**+HIS 220 Contemporary Studies** 3-0-3  
This course provides a survey of contemporary problems and issues within a historical context. Topics might include nationalism, the rise of Islam as a powerful influence in the post-Cold War environment, environmental issues, and the impact of colonialism on modern, Third World Society. Offered spring semester.

**+HIS 256 African-American History** 3-0-3  
This course focuses on the experience of African-American people in the western hemisphere, particularly the United States. It surveys the period from the African origins of the slave trade during the period of exploration and colonization to the present. The course presents a comparison between the African experience in the United States and in Mexico and South America. Offered fall semester.

**+HIS 260 Alabama History** 3-0-3  
This course surveys the development of the state of Alabama from pre-historic times to the present. The course presents material on the discovery, exploration, colonization, territorial period, antebellum Alabama, Reconstruction, and modern history. Offered fall and summer semesters.

**HIS 285 Southern Research** 3-0-3  
Fall Semester Only  
This course offers students an opportunity to study topics related to southern history. Offered spring semester.

**+HIS 299 Directed Studies in History** 1/3-0-1/3  
This course affords students opportunities to study selected topics of a historical nature under the direction of an instructor either as part of class or on an individual basis. Internships with historical and preservation organizations, thesis development, and the analysis of secondary monographs are examples of activities for this course. HIS 299 may be repeated for credit.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Horticulture (HOC)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**HOC 110 Introduction to Horticultural Science** 2-2-3  
This course introduces students to botany, genetics, and plant nomenclature. Topics include an overview of the horticultural industry and career opportunities. Upon completion, students should be able to perform basic tasks associated with employment in the horticultural industry.

**HOC 115 Soils and Fertilizers** 2-2-3  
This course is a study of soil properties and the management practices related to the use of fertilizers. Topics include soil classification, mapping, and fertilizer needs based on current and intended use. Upon completion, students should be able to develop soil fertility management programs.

**HOC 120 Plant Propagation** 1-4-3  
This course is a study of the seed production, root formation, wound healing, and other practical phases of plant reproduction. Methods commonly used to reproduce plants by sexual and asexual means are emphasized. Upon completion, students should be able to identify and demonstrate appropriate methods of reproducing plants from seeds, cuttings, and layering.

**HOC 125 Turf Management** 1-4-3  
This course is the study of all major southern lawn and sport grasses, their establishment and maintenance. Topics include turf equipment, fertilizers, insect and disease problems, and mowing techniques. Upon completion, students should be able to evaluate the quality of an existing turf area and prescribe a maintenance program for turf used for lawns, playing fields and parks.

**HOC 130 Nursery Production** 1-4-3  
PREREQUISITE: HOC 115.  
This course focuses on all aspects of producing plants in a nursery. Topics include soil and other media for plant growth, container selection, plant propagation, watering and fertilization, pest control, and production practices commonly used by commercial growers. Upon completion, students should be able to demonstrate proficiency in all phases of nursery plant productions.

**HOC 135 Ornamental Plant Identification and Culture** 1-4-3

This course focuses on the identification and growth requirements of ornamental plants. Topics include identification, habits of growth, cultural requirements, and landscape use of ornamental plants of the southeastern United States. Upon completion, students should know common and botanical names of landscape plants and will know the appropriate use of each plant.

**HOC 140 Ornamental Plant Pest Management** 2-2-3

This course is a study of plant pests affecting the production and maintenance of ornamental plants. Emphasis is on arthropods, weeds, cultural control, chemical control, and disease-causing agents including environmental factors. Upon completion, students should be able to identify the signs and symptoms of invading pests and the characteristics associated with the onset of diseases in turfgrass and ornamental plants and will be able to develop appropriate pest control plans.

**HOC 210 Greenhouse Management** 1-4-3

This is an introductory course in greenhouse plant production. Topics include types of structures, construction techniques, covering materials, and temperature control. Upon completion, students should be able to apply basic greenhouse production procedures.

## Humanities (HUM)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**HUM 120 International Studies in Culture** 1-3/0/1-3

This course offers a survey of art, music, and culture of foreign countries. This may involve travel abroad and may be repeated for credit.

**HUM 298 Directed Studies**

This course provides an opportunity for the student to study selected topics in the area of the humanities under the supervision of a qualified instructor. The specific topics will be determined by the interests of the students and faculty and the course may be repeated for credit.

**HUM 299 Phi Theta Kappa**

This course provides an opportunity for the student to study selected topics in the area of the humanities under the supervision of a qualified instructor. The specific topics will be determined by the interests of the students and faculty and the course may be repeated for credit.

## Interdisciplinary Studies (IDS)

**IDS 200 College Scholars Bowl Workshop** 1-0-1  
PREREQUISITE: Permission of the instructor.

This course offers the student preparation, practice, and participation in the College Scholars Bowl Program and competition. IDS 200 may be repeated for credit.

**IDS 299 Directed Studies in Leadership** 1/2-0-1/2  
PREREQUISITE: Permission of the instructor.

This course provides training and experience in leadership techniques and practice. Students are required to serve in leadership positions on campus or in the community. IDS 299 may be repeated for credit.

## Industrial Electronics Technology (ILT)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**ILT 100 Applied Electronic Computation** 3-0-3

This course is an applied mathematics and algebra course for students in electronics or similar programs. Topics include decimals, fractions, negative numbers, powers and roots, the metric systems, logarithms, applied trigonometry and algebra. Upon completion of this course a student will be able to perform applied mathematics calculations needed in Electronics.

**ILT 101 Survey of Electronics** 3-0-3

This course, in a non-technical way, describes the history and implications of electronics in the modern world. Topics include fundamental concepts of electronics theory, devices, digital and analog circuits, microprocessors, and modern test equipment. Upon completion, students should be able to describe basic laws and circuit behavior for analog and digital circuits.

**ILT 106 Concepts of Direct Current** 3-6-5

This course provides a study of basic concepts and application of direct current (DC). Specific topics include but are not limited to: an introduction to electrical theory, units of electrical measurement, DC electrical components, and constructing various types of DC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of common test equipment used to analyze and troubleshoot DC circuits and to prove the theories taught during classroom instruction.

**ILT 107 Concepts of Alternating Current** 3-6-5

This course provides a study of basic concepts and application of alternating current (AC). Specific topics include but are not limited to: an introduction to AC electrical theory, AC electrical measurements, and constructing and measuring various types of AC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of various test equipment used to analyze and troubleshoot AC circuits.

**ILT 112 Concepts of Digital Electronics** 3-6-5

This course provides instruction in digital electronics. Topics include: number systems and codes, a review of Boolean algebra, logic elements, digital circuits, programmable logic circuits, and memory and computing circuits. This course provides laboratory exercises to analyze, construct, test and troubleshoot digital circuits.

**ILT 113 Concepts of Electronic Circuits** 3-6-5  
This course covers the commonly utilized circuits found in all areas of electronics. These include various rectifiers, filters, voltage regulating circuits, operational amplifier circuits, ICs, and oscillator circuits. Upon completion students will be able to construct and test various types of electronic circuits.

**ILT 125 Digital Communications** 3-0-3  
PREREQUISITE: ILT 112.

This course provides the electronics technician with sufficient background in data and digital communications to enter this rapidly expanding field. It includes telephone systems, error detection and correction, data link protocols, modems, multiple-channel systems, network architecture, fiber-optic communications, and data communications applications. Upon completion of this course, students should be able to describe the operation of various digital communications circuits and calculate all parameters.

**ILT 126 Digital Communications Lab** 0-6-2  
COREQUISITE: ILT 125

This course provides experimentation to verify theories of digital communication. Upon completion of this course and Digital Communications, students should be able to construct various digital communications circuits and make necessary measurements and adjustments.

**ILT 129 Personal Computer (PC) Hardware** 2-3-3  
This course covers PC Hardware terminology, component purpose, configuration, pricing and selecting components and systems, for assembling, repairing, and upgrading personal computers. Upon completion of this course, students should be able to describe the basic systems of a PC and be able to perform disassembly and assembly of same.

**ILT 130 PC Software Installation and Maintenance** 2-3-3

This course will cover installation and maintenance for operating systems and application software on personal computers. Upon completion of this course, students should be able to install and maintain common software packages found on personal computers.

**ILT 131 Personal Computer (PC) Problem Determination** 2-3-3

PREREQUISITE: ILT 129 and ILT 130.

This course will cover various hardware and software tools for diagnosing failures of personal computers. Upon completion of this course, students should be able to diagnose and prescribe the repair steps for a faulty personal computer.

**ILT 132 Programming Survey for Technicians** 3-0-3  
This course introduces the student to common programming languages which they may encounter as technicians. Upon completion of this course, students should be able to write simple programs in common programming languages encountered by technicians.

**ILT 133 Electronic Drafting** 0-3-1

This course includes basic drawing techniques, interpreting schematic diagrams and recognizing electronic symbols. Upon completion of this course, students should be able to recognize electronic symbols and draw schematic, layout, and pictorial drawings.

**ILT 135 Local Area Networks (LANs)** 2-3-3  
This course provides the student with knowledge of planning, installation, maintenance, and administration of local area networks. Upon completion of this course, students should be able to install and setup a basic local area network.

**ILT 164 Circuit Fabrication I** 0-3-1

This course provides instruction in fabrication of functional circuits and is an introduction to device construction and fabrication. Utilizing discrete components, students will fabricate functional circuits. Topics include soldering, cable construction, coaxial cable connection and termination, component mounting, cases, and chassis, printed circuit board design, layout, fabrication, and repair, as well as soldering techniques, care of tools, wire splicing, wire wrapping, connector maintenance, and related shop safety. Upon completion of this course, students should be able to perform basic circuit and project construction.

**ILT 169 Hydraulics/Pneumatics** 2-2-3

This course provides an introduction to hydraulics and pneumatics. Topics include hydraulic pumps, pneumatic compressors, and system components such as valves, filters, regulators, actuators, accumulators, and lubricators. Upon completion, students should be able to apply principles of hydraulics and pneumatics.

**ILT 175 Computer Fundamentals for Technology Students** 3-0-3

This course introduces the student to applications of computers in the laboratory setting. It will cover the computer from a hardware standpoint and introduce the operating system. Application software will include word processing, spreadsheets, database managers, and other electronic related software. Upon completion, students should be able to operate a personal computer in the technical setting.

**ILT 180 Special Topics** 0/3-0-9/3

PREREQUISITE: Permission of the instructor.

This course is designed to allow students an opportunity to study directly-related topics of particular interest which require the applications of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**ILT 194 Programmable Logic Controllers I** 2-3-3

This course focuses on the use of PLCs. Topics include operations, programming procedures, fault isolation procedures, and methods of entering, executing, debugging, and changing programs. The lab enables students to practice operations, programming procedures, fault isolation procedures, methods of entering, executing, debugging and changing programs. Upon completion, students should be able to apply principles of operations and programming of PLCs.

**ILT 196 Programmable Logic Controllers II** 2-3-3

This course includes the principles of state-of-the art programmable logic controls (PLC's), including hardware, programming, and program design. Emphasis is placed on, but not limited to, the following: developing working programs, timers, counters, different special functions, and designing programs from existing hardwired systems.

**ILT 201 Industrial Electronics** 3-0-3

PREREQUISITE: ILT 205.

This course covers applications of electronics in industry with a major emphasis on microprocessors as applied to data acquisition and machine control. Topics include A/D and D/A conversion, signal conditioning, sensors and transducers, control devices, stepper motors, and microprocessor interfacing. Upon completion of this course, students should be able to describe the operation of various sensors, signal conditioning, A/D and D/A conversion, and control devices, as well as, perform necessary calculations.

**ILT 202 Industrial Electronics Lab** 0-6-2

COREQUISITE: ILT 201.

This course demonstrates the concepts devices, and applications of electronics in industrial processes. Upon completion of this course, students should be able to construct, evaluate, and calibrate basic industrial sensing and control circuits.

**ILT 203 Biomedical Electronics I** 3-0-3

PREREQUISITE: Permission of the instructor.

This course includes the technical information necessary in learning to repair biomedical equipment. Topics include the human body, electrodes and transducers, bioelectric amplifiers, physiological pressure measurements, and electrical and patient safety. Upon completion of this course, students should be able to describe the operation of various circuits and systems commonly found in biomedical equipment.

**ILT 204 Biomedical Electronics II** 3-0-3

PREREQUISITE: ILT 203.

This course combines theory gained from Biomedical Electronics I for a deeper understanding of biomedical equipment troubleshooting. Topics include respiratory therapy instrumentation, intensive and coronary care unit instrumentation, operating room instrumentation, medical laboratory instrumentation, and electrical safety. Upon completion of this course, students should be able to describe the operation of various circuits and systems commonly found in biomedical equipment.

**ILT 205 Microprocessors** 3-0-3

PREREQUISITE: ILT 112.

This course introduces microprocessors and explores their applications. This course emphasizes programming and interfacing the microprocessor chip. Upon completion of this course, students should be able to perform binary arithmetic, perform computer arithmetic, describe the basic operation procedures for a microprocessor system, and write programs for a basic microprocessor.

**ILT 206 Microprocessors Lab** 0-6-2

COREQUISITE: ILT 205.

This course provides familiarization of microprocessor instruction sets. Experiments in programming and interfacing provide an understanding of microprocessor theory. Upon completion of this course, students should be able to program and interface a basic microprocessor system.

**ILT 216 Industrial Robotics** 3-0-3

This is an introductory course for robotics including the history of robotics, social implications, and reasons for implementing. Robot classification, associated terminology, power systems, control systems, and end-of-arm tooling will be covered. Upon completion, students should be able to explain the basic systems and operation of a simple robot.

**ILT 226 BMET Certification Preparation** 3-0-3

This course includes the information necessary for the successful completion of the technician certification examination given by the International Certification Commission for Biomedical Equipment Technology. Upon completion of this course, students should understand the preparation necessary to successful completion of the exam process.

**ILT 228 FCC General Radiotelephone License Prep** 3-0-3

This course includes the information necessary for the successful completion of the Federal Communication Commission's General Radiotelephone License Examination. A comprehensive coverage of rules, regulations, and electronic theory is accomplished. Upon completion of this course, students should understand the preparation necessary to successful completion of the exam process.

**ILT 232 PC Repair Clinical** 0-10-3

PREREQUISITE: Permission of instructor.

This course allows the student to work in the technical capacity as a PC technician at the college or other local sites as approved by the college. Upon completion, the student should be able to perform specific job related skills associated with PC repair.

**ILT 234 Microprocessor Systems Troubleshooting** 1-3-2

PREREQUISITE: ILT 205.

This course provides familiarization with various techniques and test equipment required to troubleshoot microprocessor based designs to the component and module level. It provides hands on experience troubleshooting microcomputer trainers designed for fault insertion. Upon completion, students should be able to troubleshoot a faulty microprocessor based system.

**ILT 239 Certification Preparation** 3-0-3

This course includes the review necessary before attempting technician certification examinations given by various non-government certifying organizations and pre-employment tests given by employers. Upon completion of this course students should understand the preparations necessary to successfully complete the exam process.

**ILT 267 RF Communications** 3-0-3

PREREQUISITE: ILT 113.

This course introduces the concepts of communications systems. Topics include communications fundamentals, AM transmitters and receivers, FM transmitters and receivers, AM and FM transceivers, pulse modulation, antenna design, and advanced communication systems. Upon completion, students should be able to describe the operation of various RF circuits and calculate all parameters.

**ILT 268 RF Communications Lab** 0-6-2

COREQUISITE: ILT 267

This course verifies basic radio frequency theories through experimentation. Upon completion of this course and RF communications, students should be able to construct various RF circuits and make necessary measurements and adjustments.

**ILT 271 Independent Study** 0/1-0/3-1

PREREQUISITE: Permission of the instructor.

This course is designed to allow students to independently study various topics related to instrumentation technology. Emphasis is placed on the refinement or advancement of a particular skill or skills. Upon completion, students should be able to perform specific job related functions according to standard operating procedures.

**ILT 272 Independent Study** 0/2-0/6-2

PREREQUISITE: Permission of the instructor.

This course is designed to allow students to independently study various topics related to instrumentation technology. Emphasis is placed on the refinement or advancement of a particular skill or skills. Upon completion, students should be able to perform specific job related functions according to standard operating procedures.

**ILT 273 Independent Study** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to allow students to independently study various topics related to instrumentation technology. Emphasis is placed on the refinement or advancement of a particular skill or skills. Upon completion, students should be able to perform specific job related functions according to standard operating procedures.

**ILT 274 Independent Study** 0-9-3

PREREQUISITE: Permission of the instructor.

This course is designed to allow students to independently study various topics related to instrumentation technology. Emphasis is placed on the refinement or advancement of a particular skill or skills. Upon completion, students should be able to perform specific job related functions according to standard operating procedures.

**ILT 280 Special Topics** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to allow students an opportunity to study directly-related topics of particular interest which require the application of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**ILT 280A Special Topics - A+ Certification Preparation** 3-0-3

PREREQUISITE: ILT 129, ILT 130, ILT 131, and ILT 135, or by permission of the instructor.

This course includes the information necessary for the successful completion of Technician A+ certification examinations. A comprehensive coverage of core hardware and operating systems is accomplished. Upon completion, students should understand the preparation necessary to successfully complete the core hardware and operation systems technologies exams.

**ILT 280B Special Topics - Network+ Certification Preparation** 3-0-3

PREREQUISITE: ILT 129, ILT 130, ILT 131, and ILT 135, or by permission of the instructor.

This course includes the information necessary for the successful completion of the vendor-neutral Computer Technology Industry Association's (CompTIA) Network+ certification examination. A comprehensive coverage of all exam objectives is accomplished. Upon completion, students should understand the preparation necessary to successfully complete the exam process.

**ILT 280E Special Topics - EEI Test Preparation** 3-0-3

This course includes the review necessary before attempting the Edison Electric Institute's test battery used by employers to predict performance in training and on the job. Areas of review will include reading comprehension, mechanical concepts, spatial ability, mathematical usage, tables and graphs, and completing the background and opinion questionnaire. Upon completion, students should be able to understand the preparations necessary to successfully complete the test battery.

**ILT 291 Cooperative Education** 0-15-3

PREREQUISITE: Permission of the instructor.

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**ILT 292 Cooperative Education** 0-15-3

PREREQUISITE: Permission of the instructor.

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**ILT 293 Cooperative Education** 0-15-3

PREREQUISITE: Permission of the instructor.

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**ILT 294 Biomedical Electronics Clinical I** 0-10-3

PREREQUISITE: ILT 203.

Students will be assigned to a local hospital facility, working in the technical capacity as a biomedical electronic technician trainee. Upon completion, students have gained experience as a biomedical equipment technician.

**ILT 295 Biomedical Electronics Clinical II** 0-10-3  
PREREQUISITE: ILT 204.

Continuation of the clinical on-site study I where students are assigned to a local hospital facility working in the technical capacity as a Biomedical Electronic Technician Trainee. Upon completion, students have gained experience as a biomedical equipment technician.

## Industrial Maintenance Technology (INT)

**INT 105 Introduction to Process Technology** 2-1-3

This course is designed to provide the student with an introduction to process control technology and various instruments used to control processes. Upon completion, students should be able to comprehend principles of process control technology and the application of various instruments used to control processes in an industrial setting.

**INT 112 Industrial Maintenance Safety Procedures** 2-1-3

This course is an in-depth study of the health and safety practices required for maintenance of industrial production equipment. Topics include traffic, ladder, electrical, and fire safety, safe work in confined spaces, electrical and mechanical lock-out procedures, emergency procedures, OSHA regulations, MSDS Right-to-Know law, hazardous materials safety, and safety equipment use and care. Upon course completion, students will be able to implement health and safety practices in an industrial production setting.

**INT 117 Principles of Industrial Mechanics** 1-2-3

This course provides instruction in basic physics concepts applicable to mechanics of industrial production equipment. Topics include the basic application of mechanical principles with emphasis on power transmission, specific mechanical components, alignment, and tension. Upon completion, students will be able to perform basic troubleshooting, repair and maintenance functions on industrial production equipment.

**INT 118 Fundamentals of Industrial Hydraulics and Pneumatics** 2-1-3

This course includes the fundamental concepts and theories for the safe operation of hydraulic and pneumatic systems used with industrial production equipment. Topics include the physical concepts, theories, laws, air flow characteristics, actuators, valves, accumulators, symbols, circuitry, filters, servicing safety, and preventive maintenance and the application of these concepts to perform work. Upon completion, students should be able to service and perform preventive maintenance functions on hydraulic and pneumatic systems.

**INT 120 Concepts of Direct Current** 3-2-5

This course provides a study of basic concepts and application of direct current (DC). Specific topics include but are not limited to: an introduction to electrical theory, units of electrical measurement, DC electrical components, and constructing various types of DC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of common test equipment used to analyze and troubleshoot DC circuits and to prove the theories taught during classroom instruction.

**INT 122 Concepts of Alternating Current** 3-2-5

This course provides a study of basic concepts and application of alternating current (AC). Specific topics include but are not limited to: an introduction to AC electrical theory, AC electrical measurements, and constructing and measuring various types of AC circuits. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators and the operation of various test equipment used to analyze and troubleshoot AC circuits.

**INT 126 Preventive Maintenance** 1-2-3

This course focuses on the concepts and applications of preventive maintenance. Topics include the introduction of alignment equipment, job safety, tool safety, preventive maintenance concepts, procedures, tasks, and predictive maintenance concepts. Upon course completion, students will demonstrate the ability to apply proper preventive maintenance and explain predictive maintenance concepts.

**INT 127 Principles of Industrial Pumps and Piping Systems** 2-1-3

This course provides information in the fundamental concepts of industrial pumps and piping systems. Topics include pump identification, operation, and installation, maintenance and troubleshooting, and piping systems, and their installation. Upon course completion, students will be able to install, maintain, and troubleshoot industrial pumps and piping systems.

**INT 128 Principles of Industrial Environmental Controls** 2-1-3

This course focuses on the basic knowledge and skills to service perform routine troubleshooting, maintenance, and adjustments of HVACR systems in an industrial environment. After completion, students will be able to perform routine, low-level maintenance on institutional environmental systems. Additionally, students receive instruction to complete the EPA 608 certification examination.

**INT 206 Industrial Motors I** 1-2-3

This course focuses on basic information regarding industrial electrical motors. Upon completion, students will be able to troubleshoot, remove, replace, and perform routine maintenance on various types of motors.

**INT 211 Industrial Motors II** 1-2-3

This course focuses on advanced information regarding industrial electrical motors. Upon completion, students will be able to troubleshoot, remove, replace, and perform advanced maintenance on various types of motors.

**INT 212 Industrial Motor Control I** 1-2-3

This course focuses on information regarding industrial motor controls and basic information regarding process logic controllers. Upon completion, students will be able to remove, replace, and wire different types of control devices for operating industrial motors.

**INT 213 Industrial Motor Control II** 1-2-3  
This course is a continuation of INT 212 focusing on additional theory and practice regarding industrial motor control schematics and wiring. Included are multispeed and softstart wiring techniques for industrial motors and synchronous motor control. The student will also be exposed to the theory, setup and programming of variable speed drives. Upon completion, students will be able to remove, replace, and wire different types of resistors, reactors and transformers similar to those used in the control of industrial polyphase motors and large DC motors.

**INT 215 Troubleshooting Techniques** 1-2-3  
This course is designed to allow students an opportunity to study directly-related topics of particular interest which require the application of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**INT 232 Manufacturing Plant Utilities** 2-1-3  
This course focuses on the theory of operating and maintaining plant utilities. Topics include the operation/control and maintenance of boilers, HVAC systems, and air compressors. Upon course completion, students will demonstrate the ability to repair and maintain utilities systems in an industrial setting.

**INT 251 Introduction to Programmable Logic Control** 2-1-3  
This course emphasizes PLC programming, connections, installations, and start-up procedures. Topics include introductory programming, PLC functions and terminology, processor unit and power supply, introductory numbering systems, relay/programming logic, and field wiring/installation and start-up. Upon course completion, students will be able to identify inputs and outputs, list capabilities of system, monitor system operation, recognize ROM and RAM functions, and recognize binary and digital number systems.

**INT 284 Applied Principles of Programmable Controls** 2-1-3  
This course provides a comprehensive study in the theory and application of specific models of programmable logic controllers. Topics include hardware configuration, memory and addressing detail function of software, instruction types, system troubleshooting, and simple programming techniques.

## Machine Shop Technology (MSP)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**MSP 101 Basic Machining Technology** 1-11-5  
COREQUISITE: MSP 104.  
This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, drilling machines, saws, milling machines, bench grinders, and layout instruments. Upon completion, students should be able to safely perform the basic operations of measuring, layout, drilling, sawing, turning, and milling.

**MSP 102 Intermediate Machining Technology** 1-11-5  
PREREQUISITE: MSP 101.

This course provides additional instruction and practice in the use of precision measuring tools, lathes, milling machines, and grinders. Emphasis is placed on setup and operation of machine tools including the selection and use of work holding devices, speeds, feeds, cutting tools, and coolants. Upon completion, students should be able to perform basic procedures on precision grinders and advanced operations of measuring, layout, drilling, sawing, turning, and milling.

**MSP 103 Advanced Machining Technology** 1-11-5  
PREREQUISITE: MSP 102.

This course provides an introduction to advanced and special machining operations. Emphasis is placed on working to specified tolerances with special and advanced setups. Upon completion, students should be able to produce a part to specifications.

**MSP 104 Basic Machining Calculations** 2-0-2  
This course introduces basic calculations as they relate to machining occupations. Emphasis is placed on basic calculations and their applications in the machine shop. Upon completion, students should be able to perform basic shop calculations.

**MSP 105 Lathes** 1-6-3  
This course covers the operation and safety practices for engine lathes. Topics include turning, grinding, boring, chamfering, necking, grooving, and threading. Upon completion, students should be able to safely operate an engine lathe using appropriate attachments.

**MSP 111 Introduction to Computer Numerical Control** 1-3-2  
PREREQUISITE: MSP 101, MSP 104.

This course introduces the concepts and capabilities of computer numerical control machine tools. Topics include setup, operation, and basic applications. Upon completion, students should be able to explain operator safety, machine protection, data input, program preparation, and program storage.

**MSP 112 Basic Computer Numerical Control Turning** 1-6-3  
PREREQUISITE: MSP 111

This course introduces the programming, setup, and operation of CNC turning centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC turning centers.

**MSP 113 Basic Computer Numerical Control Milling** 1-6-3  
PREREQUISITE: MSP 111

This course introduces the manual programming, setup, and operation of CNC machining centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC machining centers.

**MSP 115 Advanced Milling Machines** 2-9-5  
This course provides additional information on milling setups including rotary tables, boring, dovetail machining, dividing head work. Students obtain hands-on experience in the setup and use of these and other milling accessories.

**MSP 121 Basic Blueprint Reading for Machinists** 2-0-2

This course covers the basic principles of blueprint reading and sketching. Topics include multi-view drawings; interpretation of conventional lines; and dimensions, notes, and thread notations. Upon completion, students should be able to interpret basic drawings, visualize parts, and make pictorial sketches.

**MSP 122 Milling Machines** 1-6-3  
PREREQUISITE: MSP 101.

This course provides instruction and practice in the use of milling machines. Emphasis is placed on the construction, operation and maintenance of milling machines. Upon completion, students should be able to design, cut, and manufacture tools and fixtures.

**MSP 124 Advance Blueprinting** 2-0-2

This course provides basic blueprint reading theory and practice for machining and welding trades. Three-dimensional comprehension and dimensioning practices are the primary concern of this course.

**MSP 127 CAM** 2-12-6

This course provides basic introduction to computer assisted programming. This includes geometry construction, tool paths, and post processing.

**MSP 131 Introduction to Metrology** 1-2-2

This course introduces the care and use of precision measuring instruments. Emphasis is placed on the inspection of machine parts and use of a wide variety of measuring instruments. Upon completion, students should be able to demonstrate the correct use of measuring instruments.

**MSP 132 Grinding Machines** 1-5-3  
PREREQUISITE: MSP 101.

This course provides instruction and practice in the use of grinding machines. Emphasis is placed on construction, operation, and maintenance of grinding machines. Upon completion, students should be able to perform essential procedures on grinding machines.

**MSP 135 Millwright Work** 2-6-4

This course provides information on welding, machine installation, couplings, precision measurement, and belts with an overview of the safety requirements for most industrial situations.

**MSP 136 Machine Repair** 1-6-3

This course provides information for students that plan to enter the field of machine tool maintenance. Concentrating on power transmission through various mechanical means and the disassembly and repair of these machines provides the students with the experience needed to repair many types of machines.

**MSP 137 Advanced CAM** 2-6-4  
PREREQUISITE: MSP 127

This course provides expanded views of CNC mill and lathe operations with in-depth instruction in the use of Computer Aided Machining (CAM) software to provide multiple axis part programs for the CNC mill using Master CAM Software.

**MSP 142 Advanced Machining Calculations** 2-0-2  
PREREQUISITE: MSP 104.

This course combines mathematical functions with practical machine shop applications and problems. Emphasis is placed on gear ratios, lead screws, indexing problems, and their applications in the machine shop. Upon completion, students should be able to calculate solutions to machining problems.

**MSP 181 Special Topics in Machine Shop Technology** 1-2-2

PREREQUISITE: Permission of the instructor.  
This course is a guided independent study of special projects in Machine Shop Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.

**MSP 182 Special Projects in Machine Shop Technology** 0-6-2

PREREQUISITE: Permission of the instructor.  
This course is a guided independent study of special projects in Machine Shop Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.

**MSP 291, 292 Co-op in Machine Shop Technology** 1/3-5/15-1/3

PREREQUISITE: Permission of instructor.  
Students work on a part-time basis in a job directly related to Machine Shop Technology. The employer and supervising instructor evaluate the student's progress. Upon completion, students will be able to apply skills and knowledge in an employment setting.

**Mass Communications (MCM)**

**+MCM113 Student Publications** 0/1-2/1-2  
These courses offer practical experience in journalism skills through working on the staff of student publications.

**+MCM114 Student Publications** 0/1-2/1-2  
These courses offer practical experience in journalism skills through working on the staff of student publications.

**+MCM213 Student Publications** 0/1-2/1-2  
These courses offer practical experience in journalism skills through working on the staff of student publications.

**+MCM214 Student Publications** 0/1-2/1-2  
These courses offer practical experience in journalism skills through working on the staff of student publications.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Mathematics (MAH) (MTH)

**MAH 101 Introductory Mathematics I** 2-2-3  
PREREQUISITE: A grade of "C" or higher in MTH 090 or appropriate mathematics placement score is required.

This course is a comprehensive review of arithmetic with basic algebra designed to meet the needs of certificate and diploma programs. Topics include business and industry related arithmetic and geometric skills used in measurement, ratio and proportion, exponents and roots, applications of percent, linear equations, formulas, and statistics. Upon completion, students should be able to solve practical problems in their specific occupational areas of study.

**MAH 102 Introductory Mathematics II** 2-2-3  
PREREQUISITE: MAH 101 and/or as required by program.

This course introduces the concepts of right triangle trigonometry and geometry with emphasis on applications to problem solving in the workplace. Topics include the basic definitions and properties of plane and solid geometry, area and volume, and right triangle trigonometry with substantial hands-on-focus in shop, laboratory, or marketplace settings. Upon completion, students should be able to solve applied problems both independently and collaboratively using technology where appropriate.

**MTH 090 Basic Mathematics** 3-0-3  
This is a developmental course reviewing arithmetical principles and computations designed to help the student's mathematical proficiency for selected curriculum entrance.

**+MTH 091 Developmental Algebra I** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 090 or appropriate mathematics placement score is required.  
This sequence of developmental courses provides the student with a review of arithmetic and algebraic skills designed to provide sufficient mathematical proficiency necessary for entry into Intermediate College Algebra.

**MTH 092 Developmental Algebra II** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 090 or appropriate mathematics placement score is required.  
This sequence of developmental courses provides the student with a review of arithmetic and algebraic skills designed to provide sufficient mathematical proficiency necessary for entry into Intermediate College Algebra.

**MTH 098 Elementary Algebra** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 090 or appropriate mathematics placement score is required.  
This course is a review of the fundamental arithmetic and algebra operations. The topics include the numbers of ordinary arithmetic and their properties; integers and rational numbers; the solving of equations; polynomials and factoring; and an introduction to systems of equations and graphs.

**MTH 100 Intermediate College Algebra** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 098 or MTH 092 or appropriate mathematics placement score is required.  
This course provides a study of algebraic techniques such as linear equations and inequalities, quadratic equations, systems of equations, and operations with exponents and radicals. Functions and relations are introduced and graphed with special emphasis on linear and quadratic functions. This course does not apply toward the general core requirement for mathematics in the AA or AS degree programs.

**+MTH 103 Introduction to Technical Mathematics** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 098 or MTH 092 or appropriate mathematics placement score is required.

This course is designed for the student in technology needing simple arithmetic, algebraic, and right triangle trigonometric skills. This course does not apply toward the general core requirements for math.

**+MTH 110 Finite Mathematics** 3-0-3  
PREREQUISITE: All core mathematics courses in Alabama must have as a minimum prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should successfully pass with a C or higher (S if taken as pass/fail) Intermediate College Algebra.

This course is intended to give an overview of topics in finite mathematics together with their applications, and is taken primarily by students who are not majoring in science, engineering, commerce, or mathematics (i.e., students who are not required to take Calculus). This course will draw on and significantly enhance the student's arithmetic and algebraic skills. The course includes sets, counting, permutations, combinations, basic probability (including Baye's Theorem), and introduction to statistics (including work with Binomial Distributions and Normal Distributions), matrices and their applications to Markov chains and decision theory. Additional topics may include symbolic logic, linear models, linear programming, the simplex method and applications.

**MTH 112 Precalculus Algebra** 3-0-3  
PREREQUISITE: All core mathematics courses in Alabama must have as a minimum prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should successfully pass with C or higher (S if taken as pass/fail) Intermediate College Algebra.

This course emphasizes the algebra of functions - including polynomial, rational, exponential, and logarithmic functions. The course also covers systems of equations and inequalities, quadratic inequalities, and the binomial theorem. Additional topics may include matrices, Cramer's Rule, and mathematical induction.

**+MTH 113 Precalculus Trigonometry** 3-0-3  
PREREQUISITE: A minimum prerequisite of high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score is required. An alternative to this is that the student should successfully pass with a C or higher (S if taken as pass/fail) MTH 112.

This course includes the study of trigonometric (circular functions) and inverse trigonometric functions, and includes extensive work with trigonometric identities and trigonometric equations. The course also covers vectors, complex numbers, DeMoivre's Theorem, and polar coordinates. Additional topics may include conic sections, sequences, and using matrices to solve linear systems.

**+MTH 115 Precalculus Algebra & Trigonometry** 4-0-4

PREREQUISITE: A minimum prerequisite of high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score is required. An alternative to this is that the student should successfully pass with a C or higher (S if taken as pass/fail) MTH 100 and receive permission from the department chairperson.

This course is a one semester combination of Precalculus Algebra and Precalculus Trigonometry intended for superior students. The course covers the following topics: the algebra of functions (including polynomial, rational, exponential, and logarithmic functions), systems of equations and inequalities, quadratic inequalities, and the binomial theorem, as well as the study of trigonometric (circular functions) and inverse trigonometric functions, and includes extensive work with trigonometric identities and trigonometric equations, vectors, complex numbers, DeMoivre's Theorem, and polar coordinates.

**+MTH 116 Mathematical Applications** 3-0-3

PREREQUISITE: A grade of "C" or higher in MTH 090 or appropriate mathematics placement score is required.

This course provides practical applications of mathematics and includes selected topics from consumer math and algebra. Some topics included are integers, percent, interest, ratio and proportion, metric system, probability, linear equations, and problem solving. This is a course designed for students seeking linkage with Wallace State and does not meet the general core requirement for mathematics.

**+MTH 118 Technical Mathematics** 3-0-3

PREREQUISITE: MTH 100 or MTH 103 or appropriate mathematics placement score.

This course includes selected topics from algebra, analytic geometry, and trigonometry with emphasis on applications to engineering technology. Topics include variation, determinants, conic sections, exponential and logarithmic functions, and solutions of right triangles. This course does not apply toward the general core requirement for mathematics.

**+MTH 120 Calculus and Its Applications** 3-0-3

PREREQUISITE: A minimum prerequisite of high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score is required. An alternative to this is that the student should successfully pass with a C or higher MTH 112.

This course is intended to give a broad overview of calculus and is taken primarily by students majoring in Commerce and Business Administration. It includes differentiation and integration of algebraic, exponential, and logarithmic functions and applications to business and economics. The course should include functions of several variables, partial derivatives (including applications), Lagrange Multipliers, L'Hopital's Rule, and multiple integration (including applications).

**+MTH 125 Calculus I** 4-0-4

PREREQUISITE: A minimum prerequisite of high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score is required. An alternative to this is that the student should successfully pass with a C or higher MTH 113 or MTH 115.

This is the first of three courses in the basic calculus sequence taken primarily by students in science, engineering, and mathematics. Topics include the limit of a function; the derivative of algebraic, trigonometric, exponential, and logarithmic functions; and the definite integral and its basic applications to area problems. Applications of the derivative are covered in detail, including approximations of error using differentials, maximum and minimum problems, and curve sketching using calculus.

**+MTH 126 Calculus II** 4-0-4

PREREQUISITE: A minimum prerequisite of high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score is required. An alternative to this is that the student should successfully pass with a C or higher MTH 125.

This is the second of three courses in the basic calculus sequence. Topics include vectors in the plane and in space, lines and planes in space, applications of integration (such as volume, arc length, work and average value), techniques of integration, infinite series, polar coordinates, and parametric equations.

**+MTH 227 Calculus III** 4-0-4

PREREQUISITE: A grade of "C" or higher in MTH 126.

This is the third of three courses in the basic calculus sequence. Topics include vector functions, functions of two or more variables, partial derivatives (including applications), quadric surfaces, multiple integration, and vector calculus (including Green's Theorem, Curl and Divergence, surface integrals, and Stokes' Theorem).

**MTH 231 Math for the Elementary Teacher 1** 3-0-3

This course is designed to provide appropriate insights into mathematics for students majoring in elementary education and to ensure that students going into elementary education are more than proficient at performing basic arithmetic operations. Topics include logic, sets and functions, operations and properties of whole numbers and integers including number theory; use of manipulatives by teachers to demonstrate abstract concepts; and by students while learning these abstract concepts as emphasized in the class. Upon completion, students are required to demonstrate proficiency in each topic studied as well as to learn teaching techniques that are grade level and subject matter appropriate, and test for mathematical proficiency and the learning of teaching concepts.

**+MTH 237 Linear Algebra** 3-0-3

PREREQUISITE: A grade of "C" or higher in MTH 126.

This course introduces the basic theory of linear equations and matrices, real vector spaces, bases and dimension, linear transformations and matrices, determinants, eigenvalues and eigenvectors, inner product spaces, and the diagonalization of symmetric matrices. Additional topics may include quadratic forms and the use of matrix methods to solve systems of linear differential equations. This course is offered upon sufficient enrollment.

**+MTH 238 Applied Differential Equations I** 3-0-3  
COREQUISITE: MTH 227.

This course is an introduction to numerical methods, qualitative behavior of first order differential equations, techniques for solving separable and linear equations analytically, and applications to various models (e.g. populations, motion, chemical mixtures, etc.); techniques for solving higher order linear differential equations with constant coefficients (general theory, undetermined coefficients, reduction of order and the method of variation of parameters), with emphasis on interpreting the behavior of the solutions, and applications to physical models whose governing equations are of higher order; the Laplace transform as a tool for the solution of initial value problems whose inhomogeneous terms are discontinuous. This course is offered upon sufficient enrollment.

**+MTH 246 Mathematics of Finance** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 098, MTH 092, or MTH 116 or appropriate mathematics placement score.

This course explores mathematical applications relevant to business practices. Types covered include simple and compound interest, credits, trade and bank discounts, annuities, amortization, depreciation, stocks and bonds, insurance, capitalization, and perpetuities. This course does not meet the general core requirement for mathematics.

**+MTH 265 Elementary Statistics** 3-0-3  
PREREQUISITE: A grade of "C" or higher in MTH 100.

This course provides an introduction to methods of statistics, including the following topics: sampling, frequency distributions, measures of central tendency, graphic representation, reliability, hypothesis testing, confidence intervals, analysis, regression, estimation, and applications. Probability, permutations, combinations, binomial theorem, random variables, and distributions may be included.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Music (MUS)

**MUS 100 Convocation** 1-0-1

This course (required for music majors/minors each semester) is designed to expose students to a variety of repertory styles and to give students an opportunity to practice individual performance skills. Emphasis is placed on exposure to performances and lectures by guest artists, faculty or students, and on personal performance(s) in class each semester.

**MUS 101 Music Appreciation** 3-0-3

This course is designed for non-music majors and requires no previous musical experience. It is a survey course that incorporates several modes of instruction including lecture, guided listening, and similar experiences involving music. The course will cover a minimum of three (3) stylistic periods, provide a multi-cultural perspective, and include both vocal and instrumental genres. Upon completion, students should be able to demonstrate a knowledge of music fundamentals, the aesthetic/stylistic characteristics of historical periods, and an aural perception of style and structure in music.

**+MUS 103 Survey of Popular Music** 1/2-0-1/2

This course provides a study of the origins, development and existing styles of popular music. Topics include ragtime, jazz, rhythm and blues, rock, country and western, folk and world music. Upon completion, students should be able to demonstrate a knowledge, understanding and an aural perception of the stylistic characteristics of popular music.

**+MUS 104 Jazz: An Introduction and History** 1/2-0-1/2

This course provides a study of the origins, development and existing styles of jazz. Topics include the blues, piano styles, Dixieland, swing, bebop, third stream, cool, free jazz and jazz/rock fusion. Upon completion, students should be able to demonstrate a knowledge, understanding and an aural perception of the different style characteristics of jazz music.

**MUS 110 Basic Musicianship** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to provide rudimentary music knowledge and skills for the student with a limited music background. Topics include a study of notation, rhythm, scales, keys, intervals, chords and basic sight singing and ear training skills. Upon completion, students should be able to read and understand musical scores and demonstrate basic sight singing and ear training skills for rhythm, melody and harmony.

**MUS 111 Music Theory I** 3-0-3

PREREQUISITE: MUS 110 or suitable placement score or permission of the instructor.

COREQUISITE: MUS 113, if ear training lab is a separate course.

This course introduces the student to the diatonic harmonic practices in the Common Practice Period. Topics include fundamental musical materials (rhythm, pitch, scales, intervals, diatonic harmonies) and an introduction to the principles of voice leading and harmonic progression. Upon completion, students should be able to demonstrate a basic competency using diatonic harmony through analysis, writing, sight singing, dictation and keyboard skills.

**MUS 112 Music Theory II** 3-0-3

PREREQUISITE: MUS 111

COREQUISITE: MUS 114, if ear training lab is a separate course.

This course completes the study of diatonic harmonic practices in the Common Practice Period and introduces simple musical forms. Topics include principles of voice leading used in three- and four-part triadic harmony and diatonic seventh chords, non-chord tones, cadences, phrases and periods. Upon completion, students should be able to demonstrate competence using diatonic harmony through analysis, writing, sight singing, dictation and keyboard skills.

**MUS 113 Music Theory Lab I** 0-2-1  
 PREREQUISITE: MUS 110 or suitable placement score or permission of the instructor.  
 COREQUISITE: MUS 111, if ear training lab is a separate course.

This course provides the practical application of basic musical materials through sight singing; melodic, harmonic and rhythmic dictation; and keyboard harmony. Topics include intervals, simple triads, diatonic stepwise melodies, basic rhythmic patterns in simple and compound meter and four-part triadic progressions in root position. Upon completion, students should be able to write, sing and play intervals, scales, basic rhythmic patterns, diatonic stepwise melodies, simple triads and short four-part progressions in root position.

**MUS 114 Music Theory Lab II** 0-2-1  
 PREREQUISITE: MUS 113.

COREQUISITE: MUS 112, if ear training lab is a separate course. This course continues the practical application of diatonic musical materials through sight singing; melodic, harmonic and rhythmic dictation; and keyboard harmony. Topics include intervals, scales, diatonic melodies with triadic arpeggiations, more complex rhythmic patterns in simple and compound meter and four-part diatonic progressions in all inversions. Upon completion, students should be able to write, sing and play all intervals, rhythmic patterns employing syncopations and beat divisions, diatonic melodies and four-part diatonic progressions.

**+MUS 115 Fundamentals of Music** 3-0-3

This course is designed to teach the basic fundamentals of music and develop usable musical skills for the classroom teacher. Topics include rhythmic notation, simple and compound meters, pitch notation, correct singing techniques, phrases, keyboard awareness, key signatures, scales, intervals and harmony using I, IV, and V with a chordal instrument. Upon completion, students should be able to sing a song, harmonize a simple tune, demonstrate rhythmic patterns and identify musical concepts through written documentation.

**+MUS 161 Diction for Singers** 2/3-0-2/3  
 PREREQUISITE: Permission of the instructor.

This course introduces the basic rules of diction in Italian, French and German for singers. Emphasis is placed on the use of the International Phonetic Alphabet. Upon completion, students should be able to sing art songs in Italian, French and German with correct diction.

**+MUS 170 Introduction to Church Music** 2/3-0-2/3

This course provides an overview of church music as a career choice, and includes the organization and operation of a graded church choir program. Topics include an introduction to conducting, rehearsal techniques, administrative skills, and may include a supervised practicum field experience. Upon completion, students should be able to select, prepare, teach and conduct a simple anthem for a graded church choir and demonstrate a knowledge of church music administration through written documentation.

**+MUS 171 Service Playing** 1/2-0-1/2  
 PREREQUISITE: Permission of the instructor.

This course provides individual or group instruction in skills relevant to playing a keyboard instrument in religious services. Topics include hymn playing, accompanying soloists and choirs, selecting appropriate music for the different denominational services and improvisation. Upon completion, students should be able to demonstrate a knowledge and understanding of the role of the church pianist or organist through written documentation and by performing that role for a religious service.

**+MUS 180 Piano Pedagogy Seminar** 1-0-1  
 PREREQUISITE: Permission of the instructor.

This course is a seminar, workshop or master class conducted by guest artists or faculty for piano teachers and students. Emphasis is placed on piano pedagogy topics such as teaching methods, piano literature and performance practice. Upon completion, students should be able to demonstrate improved knowledge and skills related to piano pedagogy through written documentation and/or performance.

**+MUS 201 Survey of Music Literature I** 3-0-3  
 PREREQUISITE: Permission of the instructor.

This is the first of a two-course sequence which surveys instrumental and vocal music to acquaint the student with musical compositions, composers and styles from ancient times through the Baroque. Emphasis is placed on the development of analytical listening skills. Upon completion, students should be able to recognize the music, identify the major composers and describe the styles of the various musical periods.

**+MUS 202 Survey of Music Literature II** 3-0-3  
 PREREQUISITE: Permission of the instructor.

This is the second of a two-course sequence which surveys instrumental and vocal music to acquaint the student with musical compositions, composers and styles from the Classical Period to the present. Emphasis is placed on the development of analytical listening skills. Upon completion, students should be able to recognize the music, identify the major composers and describe the styles of the various musical periods.

**+MUS 203 Music History I** 3-0-3

This course provides a study of the development of music from ancient times through the Baroque Period. Emphasis is placed on period style characteristics, representative composers and their works, and socio-cultural influences. Upon completion, students should be able to demonstrate knowledge, understanding and an aural perception of period style characteristics, forms, composers and representative works.

**+MUS 204 Music History II** 3-0-3

This course provides a study of the development of music from the Classical Period to the present. Emphasis is placed on period style characteristics, representative composers and their works, and socio-cultural influences. Upon completion, students should be able to demonstrate a knowledge, understanding and an aural perception of period style characteristics, forms, composers and representative works.

**MUS 211 Music Theory III** 3-0-3

PREREQUISITE: MUS 112.

COREQUISITE: MUS 213, if ear training lab is a separate course. This course introduces the student to the chromatic harmonic practices in the Common Practice Period. Topics include secondary functions, modulatory techniques, and binary and ternary forms. Upon completion, students should be able to demonstrate competence using chromatic harmony through analysis, writing, sight singing, dictation and keyboard skills.

**MUS 212 Music Theory IV** 3-0-3

PREREQUISITE: MUS 211.

COREQUISITE: MUS 214, if ear training lab is a separate course. This course completes the study of chromatic harmonic practices in the Common Practice Period and introduces the student to twentieth-century practices. Topics include the Neapolitan and augmented sixth chords, sonata form, late nineteenth-century tonal harmony and twentieth-century practices and forms. Upon completion, students should be able to demonstrate competence using chromatic harmony and basic twentieth century techniques through analysis, writing, sight singing, dictation and keyboard skills.

**MUS 213 Music Theory Lab III** 0-2-1

PREREQUISITE: MUS 114.

COREQUISITE: MUS 211, if ear training lab is a separate course. This course provides the practical application of chromatic musical materials through sight singing; melodic, harmonic and rhythmic dictation; and keyboard harmony. Topics include melodies with simple modulations, complex rhythms in simple and compound meter, and secondary function chords. Upon completion, students should be able to write, sing and play modulating melodies, rhythmic patterns with beat subdivisions and four-part chromatic harmony.

**MUS 214 Music Theory Lab IV** 0-2-1

PREREQUISITE: MUS 213.

COREQUISITE: MUS 212, if ear training lab is a separate course.

This course provides the practical application of chromatic musical materials and simple twentieth century practices through sight singing; melodic, harmonic and rhythmic dictation; and keyboard harmony. Topics include chromatic and atonal melodies; complex rhythmic patterns in simple, compound and asymmetric meters; chromatic chords and twentieth-century harmony. Upon completion, students should be able to write, sing and play chromatic and atonal melodies, complex rhythms and meters, four-part chromatic harmony and simple twentieth-century chord structures.

**+MUS 215 Composition I** 1/2-0-1/2

PREREQUISITE: MUS 112 or permission of the instructor.

This course introduces the basic techniques and applications of musical composition. Emphasis is placed on creativity and original thought processes in music. Upon completion, students should be able to create an original musical composition.

**+MUS 216 Composition II** 1/2-0-1/2

PREREQUISITE: MUS 215.

This course provides more advanced instruction in musical composition techniques. Emphasis is placed on musical thought processes which result in musical composition. Upon completion, students should be able to create, notate correctly and stage performances of original musical compositions.

**+MUS 217 Jazz Improvisation** 1-3/0/1-3

PREREQUISITE: Permission of the instructor.

This course is designed to prepare the student with the theoretical background and improvisational techniques utilized in jazz performance. Emphasis is placed on the understanding of chord structures, chord progressions, scale structures and melodic design. Upon completion, students should be able to perform an improvisational solo with a jazz ensemble.

**+MUS 251 Introduction to Conducting** 3-0-3

PREREQUISITE: MUS 110 or permission of the instructor.

This course introduces the fundamentals of conducting choral and/or instrumental ensembles. Topics include a study of simple and compound meters, score reading and techniques for conducting effective rehearsals. Upon completion, students should be able to prepare and conduct a choral and/or instrumental score in a rehearsal or performance setting.

**+MUS 270 Organization of the Church Music Program** 2/3-0-2/3

PREREQUISITE: Permission of the instructor.

This course is designed to explore administrative models of a comprehensive church music program. Topics include leadership, administrative structure, music personnel, facilities, equipment, vestments, music library, budgeting, planning, vocal and instrumental ensembles and scheduling for a music program. Upon completion, students should be able to demonstrate how to plan, coordinate and administer a comprehensive church music program.

**+MUS 271 Church Music Literature** 2/3-0-2/3

PREREQUISITE: MUS 170 or permission of the instructor.

This course provides an historic survey of traditional church music from the 17<sup>th</sup> century to the present and introduces contemporary Christian styles. Topics include criteria for choosing appropriate music for graded church choirs at easy, medium and advanced levels of difficulty, and a survey of publishing resources and cataloging systems. Upon completion, students should be able to demonstrate a knowledge and understanding of church music literature.

**+MUS 272 The Children's Choir** 2/3-0-2/3

PREREQUISITE: Permission of the instructor.

This course is designed to provide techniques for working with the child's voice in a choral setting. Topics include working with children's voices, rehearsal techniques, selecting literature, vestments and organizing a graded choir program. Upon completion, students should be able to demonstrate how to plan, coordinate and administer a graded choir program in a church.

**+MUS 273 Literature for the Church Soloist** 2/3-0-2/3

PREREQUISITE: Permission of the instructor.

This course is designed to acquaint the singer with literature appropriate for use in services of worship. Topics include voice classification, study of the literature for general and seasonal use, and resources for publications and materials. Upon completion, students should be able to demonstrate a knowledge and understanding of repertoire suitable for use throughout the church year, sources of solo literature and vocal classification.

**+MUS 279 Church Music Practicum** 0-2-1  
PREREQUISITE: Permission of the instructor.

This course is designed to provide supervised experience in the various areas of church music through directed study, practice, observation and other supervised experiences. Emphasis is placed on designing, implementing and documenting a practicum project related to a particular area of church music. Upon completion, students should be able to produce documentation that demonstrates the scope of the project.

**+MUS 290 Introduction to Commercial Music** 2/3-0-2/3

This course provides an introduction to the commercial music industry and the types of careers in commercial music. Topics include music publishing, recording, contracts, agents and managers, copyrights, unions, music companies and dealers. Upon completion, students should be able to demonstrate a basic knowledge and understanding of the different components of the commercial music industry and the various career options.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Music Ensemble (MUL)

**Class Performance Instruction** 0-2-1

Group instruction is available in voice, piano, strings, woodwinds, brass, percussion and fretted instruments for students with little or no previous training. Emphasis is placed on the rudiments of music, basic performance technique and general musicianship skills. Upon completion of one or a sequence of courses, students should be able to demonstrate a basic proficiency in singing or playing and a knowledge of music fundamentals.

MUL 101-02; 201-02	CLASS PIANO I, II, III, IV
MUL 111-12; 211-12	CLASS VOICE I, II, III, IV
MUL 121-22; 221-22	CLASS STRINGS I, II, III, IV
MUL 131-32; 231-32	CLASS WOODWINDS I, II, III, IV
MUL 151-52; 251-52	CLASS PERCUSSION I, II, III, IV
MUL 161-62; 261-62	CLASS FRETTED INSTR. I, II, III, IV

**MUL 170-71, 270-71 Music Workshop I, II, III, IV** 0-2-1  
PREREQUISITE: Permission of the instructor.

This course is a seminar clinic in advanced rehearsal/performance techniques. Emphasis is placed on intensive rehearsal techniques required for advanced or specialized performance groups. Upon completion, students should be able to effectively participate in performances presented by this type of ensemble.

**MUL 172-73, 272-73 Musical Theatre Workshop I, II, III, IV** 0-4-2

PREREQUISITE: Permission of the instructor.  
This course includes the study of musical theater history, styles, performance and technical production. Emphasis is placed on the supervised study, preparation, production and performances of scenes or complete works of musical theater. Upon completion, students should be able to effectively participate in a public presentation of the prepared scenes or work in an assigned performance or technical role.

**Music Ensembles** 0-2-1  
PREREQUISITE: Permission of the instructor.

This course provides an opportunity for students to participate in a performing ensemble. Emphasis is placed on rehearsing and performing literature appropriate to the mission and goals of the group. Upon completion, students should be able to effectively participate in performances presented by the ensemble.

MUL 180-81; 280-81	CHORUS I, II, III, IV
MUL 182-83; 282-83	VOCAL ENSEMBLE I, II, III, IV
MUL 184-85; 284-85	JAZZ/SHOW CHOIR I, II, III, IV
MUL 190-91; 290-91	CONCERT BAND I, II, III, IV
MUL 192-93-292-93	INSTRUMENTAL ENSEMBLE I, II, III, IV
MUL 196-97; 296-97	JAZZ/SHOW BAND I, II, III, IV

## Music Performance (MUP)

**Individual Performance Instruction** 0-.5-1

PREREQUISITE: Permission of the instructor.  
Individual performance instruction is available in keyboard instruments, voice, strings, woodwinds, brass, percussion and fretted instruments. Emphasis is placed on developing technique, repertoire and performance skills commensurate with the student's educational goals. Students are required to practice a minimum of five hours per week for each credit hour. Upon completion, students should be able to effectively perform assigned repertoire and technical studies in an appropriate performance evaluation setting.

+MUP 101-02; 201-02	PRIVATE PIANO I, II, III, IV
+MUP 111-12; 211-12	PRIVATE VOICE I, II, III, IV
+MUP 133-34; 233-34	PRIVATE GUITAR I, II, III, IV
+MUP 141-42; 241-42	PRIVATE FLUTE I, II, III, IV
+MUP 143-44; 243-44	PRIVATE CLARINET I, II, III, IV
+MUP 145-46; 245-46	PRIVATE SAXOPHONE I, II, III, IV
+MUP 151-52; 251-52	PRIVATE OBOE I, II, III, IV
+MUP 153-54; 253-54	PRIVATE BASSOON I, II, III, IV
+MUP 161-62; 261-62	PRIVATE TRUMPET I, II, III, IV
+MUP 163-64; 263-64	PRIVATE FRENCH HORN I, II, III, IV
+MUP 165-66; 265-66	PRIVATE MELLOPHONE I, II, III, IV
+MUP 171-72; 271-72	PRIVATE TROMBONE I, II, III, IV
+MUP 173-74; 273-74	PRIVATE EUPHONIUM I, II, III, IV
+MUP 175-76; 275-76	PRIVATE TUBA I, II, III, IV
+MUP 181-82; 281-82	PRIVATE PERCUSSION I, II, III, IV

+MUP courses are limited to music majors or minors only.

## Non-Destructive Testing Technology (NDT)

**+NDT 100 Introduction to Non-Destructive Testing** 3-0-3

This introductory course covers all phases of non-destructive testing. It is designed to acquaint participants with a basic understanding of NDT. Topics include applications, test principles, methods, and limitations of NDT. Upon completion of the course the student will have a basic knowledge and understanding of all aspects of NDT. Engineers, auditors, and management personnel who require a basic understanding of NDT methods will benefit from this course.

**+NDT 110 Radiography I** 3-0-3  
This course is designed to provide an understanding of basic radiography. Topics include radiography, radiation protection, safety, and equipment. Upon completion, students should have a basic understanding of radiography as an NDT process.

**+NDT 120 Ultrasonics I** 3-0-3  
This course is designed to provide an understanding of ultrasonic test theory and applications. Topics include compressional wave inspection, thickness measurement, and transverse wave inspection. Upon completion, students should have a basic knowledge of ultrasonic testing.

**+NDT 130 Eddy Current I** 3-0-3  
This course is designed to familiarize the student with Electromagnetic testing. Topics include eddy current testing techniques, crack detection, tube inspection, and lift off techniques as well as a discussion of applications of Electromagnetic Inspection. Upon completion, students should be able to perform basic eddy current inspection.

**+NDT 140 Visual Techniques in Non-Destructive Testing** 3-0-3  
This course covers basic visual inspection techniques including liquid penetrant, magnetic particle, and leak testing. Topics include fluorescent and magnetic exercises in surface indication detection. Upon completion the student should be able to use visual techniques.

**+NDT 150 Health Physics Relative to Radiation** 3-0-3  
This survey of health physics course covers the physical consequences of ionizing radiation on the human body. Topics include both short and long-term effects to human physiology. Upon completion, students should have a thorough knowledge of radiation's effect on the human body.

**+NDT 160 Infrared (IR) Thermography I** 3-0-3  
This course introduces the student to the principles of thermal imaging systems in non-destructive evaluation environments. Topics include testing for stress indications in simulated industrial environments. Upon completion, students should be able to perform basic IR NDT techniques.

**+NDT 210 Radiography II** 3-0-3  
This course is an extension of principles of Radiography I emphasizing inspection requirements. Topics include setting up radiographic equipment, posting radiation areas, exposure calculations, and qualification of radiographs. Upon completion, students should have a thorough working knowledge of the use of radiography in NDT.

**+NDT 220 Ultrasonics II** 3-0-3  
This course is an extension of NDT 120 designed to allow students to work with inspection equipment and test samples. Topics include angle beam calibration and flaw location and evaluation to various codes. Upon completion, students should be able to perform basic ultrasonic inspection.

**+NDT 230 Eddy Current II** 3-0-3  
A continuation of NDT 130, this course provides students with hands-on experience. Topics include Conductivity Techniques, Amplitude Analysis vs. Phase Analysis, and Leakage Flux Inspection. Upon completion, students should be able to perform calibration and inspection in accordance with written procedures.

**+NDT 260 Infrared (IR) Thermography II** 3-0-3  
A continuation of NDT 160, this course stresses reading and applying standard measurement criteria established in military specification documents. Topics include use of IR in inspection and analysis. Upon completion, students should be able to apply and use written procedures.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## **Nurse Assistant (NAS)\***

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**NAS 100 Long Term Care Nursing Assistant** 3-3C-4  
This course fulfills the eighty (80) hour OBRA requirements for training of long-term care nursing assistants in preparation for certification through competency evaluation. Emphasis is placed on the development of the knowledge, attitudes, and skills required of the long-term care nursing assistant. Upon completion, students should demonstrate satisfactory performance on written examinations and clinical skills.

**SKILLS LABORATORY/CLINICAL PRACTICE (S OR C)** - Three hours of skills laboratory or clinical practice under the supervision of an instructor.

**PRECEPTORSHIP (P3)** - Three hours of clinical experience per week under the supervision of a health care professional who is currently licensed, has expertise in the selected clinical area, and serves as a facilitator of learning.

## **Nursing (NUR)**

This information reflects the new statewide curriculum development by ACS effective 05/06. Every effort has been made to assure accuracy. Please contact your nursing advisor for any further information.

**NUR 102 Fundamentals of Nursing** 3-6S-3C-6  
PREREQUISITES: Per Nursing Department Policies.  
CO-REQUISITES: NUR 103, NUR 104, BIO 201, MTH 116, MTH 100 or higher level.

This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Students learn concepts and theories basic to the art and science of nursing. The role of the nurse as a member of the healthcare team is emphasized. Students are introduced to the concepts of client needs, safety, communication, teaching/learning, critical thinking, ethical-legal, cultural diversity, nursing history, and the program's philosophy of nursing. Additionally, this course introduces psychomotor nursing skills needed to assist individuals in meeting basic human needs. Skills necessary for maintaining microbial, physical, and psychological safety are introduced along with skills needed in therapeutic interventions. At the conclusion of this course students demonstrate competency in performing basic nursing skills for individuals with common health alterations.

**NUR 103 Health Assessment** 0-3S-1  
 PREREQUISITES: Per Nursing Department Policies.  
 CO-REQUISITES: NUR 102, NUR 104, BIO 201, MTH 116, MTH 100 or higher level.

This course is designed to provide students the opportunity to learn and practice history taking and physical examination skills with individuals of all ages, with emphasis on the adult. The focus is on symptom analysis along with physical, psychosocial, and growth and development assessments. Students will be able to utilize critical thinking skills in identifying health alterations, formulating nursing diagnoses and documenting findings appropriate to nursing.

**NUR 104 Introduction to Pharmacology** 0-3S-1  
 PREREQUISITES: Per Nursing Department Policies.  
 CO-REQUISITES: NUR 102, NUR 103, BIO 201, MTH 116, MTH 100 or higher level.

This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. This course introduces students to basic principles of pharmacology and the knowledge necessary to safely administer medication. Course content includes legal implications, pharmacokinetics, pharmacodynamics, calculations of drug dosages, medication administration, and an overview of drug classifications. Students will be able to calculate and administer medications.

**NUR 105 Adult Nursing** 5-9C-6  
 PREREQUISITES: Per Nursing Department Policies, sequence NUR 102, NUR 103, NUR 104, BIO 201, MTH 116, MTH 100 or higher level.

CO-REQUISITES: NUR 106, ENG 101, BIO 202  
 This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Emphasis is placed on providing care to individuals undergoing surgery, fluid and electrolyte imbalance, and common alterations in respiratory, musculoskeletal, gastrointestinal, cardiovascular, endocrine, and integumentary systems. Nutrition, pharmacology, communication, cultural, and community concepts are integrated.

**NUR 106 Maternal and Child Nursing** 4-3C-5  
 PREREQUISITES: Per Nursing Department Policies, sequence NUR 102, NUR 103, NUR 104, BIO 201, MTH 116, MTH 100 or higher level.

CO-REQUISITES: NUR 105, ENG 101, BIO 202  
 This course focuses on the role of the nurse in meeting the physiological, psychosocial, cultural and developmental needs of the maternal and child client. Course content includes antepartal, intrapartal, and postpartal care, complications of pregnancy, newborn care, human growth and development, pediatric care, and selected pediatric alterations. Nutrition, pharmacology, cultural diversity, use of technology, communication, anatomy and physiology review, medical terminology, critical thinking, and application of the nursing process are integrated throughout this course. Upon completion of this course students will be able to provide and manage care for maternal and pediatric clients in a variety of settings.

**NUR 107 Adult/Child Nursing** 5-9C-8  
 PREREQUISITES: NUR 105, NUR 106, ENG 101, BIO 202  
 CO-REQUISITES: NUR 108, NUR 109

This course provides students with opportunities to develop competencies necessary to meet the needs of individuals throughout the life span in a safe, legal, and ethical manner using the nursing process in a variety of settings. Emphasis is placed on providing care to individuals experiencing complex alterations in: sensory/perceptual reproductive, endocrine, genitourinary, neurological, immune, cardiovascular, and lower gastrointestinal systems. Additional instruction is provided for care for clients experiencing burns, cancer, and emergent conditions. Nutrition, pharmacology, therapeutic communication, community, cultural diversity, health promotion, error prevention, critical thinking, impacts on maternal and child clients are integrated throughout the course.

**NUR 108 Psychosocial Nursing** 2-3C-3  
 PREREQUISITES: NUR 105, NUR 106, ENG 101, BIO 202  
 CO-REQUISITES: NUR 107, NUR 109

This course is designed to provide an overview of psychosocial adaptation and coping concepts used when caring for clients with acute and chronic alterations in mental health in a variety of settings. Topics include therapeutic communication skills, normal and abnormal behaviors, treatment modalities, and developmental needs. Upon completion of this course, students will demonstrate the ability to assist clients in maintaining psychosocial integrity through the use of the nursing process.

**NUR 109 Role Transition for the Practical Nurse** 2-3S-3  
 PREREQUISITES: Successful completion of first and second term courses.

CO-REQUISITES: NUR 107, NUR 108  
 This course provides students with opportunities to gain knowledge and skills necessary to transition from student to practicing nurse. Content includes a discussion of current issues in health care, practical nursing leadership and management, professional practice issues, and transition into the workplace. Emphasis is placed on NCLEX-PN test-taking skills, computer-assisted simulations and practice tests, development of a prescriptive plan for remediation, and review of selective content, specific to the practice of practical nursing.

**200 level courses are only for those students admitted to the ADN Program.**

**NUR 200 Nursing Career Mobility Assessment**

This course is designed to provide LPN mobility students with self-directed opportunities to prepare for placement into the third semester of the ADN program. Emphasis is on assessment and validation of selected theory, process, and skills covered in NUR 102, 103, 104, 105, and 106. Upon successful completion of assessments, students are eligible for progression into NUR 201. Students who successfully complete this course are awarded 15 non-traditional hours at the completion of the LPN mobility curriculum.

**NUR 201 Nursing Through the Lifespan I 3-6C-5**

PREREQUISITES: Successful completion of first and second term courses

CO-REQUISITES: PSY 200, BIO 220

This course provides opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Students manage and provide collaborative care to clients who are experiencing selected alterations in gastrointestinal, reproductive, sensory, and endocrine systems in a variety of settings. Additional instruction is provided for oncology, mental health, teaching/learning concepts, and advanced dosage calculations. Nutrition, pharmacology, communication, cultural, and community concepts are integrated.

**NUR 202 Nursing Through the Lifespan II 3-9C-6**

PREREQUISITES: Successful completion of first, second and third term courses

CO-REQUISITES: PSY 210, SPH 106, SPH 107, or SPH 116

This course builds upon previous instruction and provides additional opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Students manage and provide collaborative care to clients who are experiencing selected alterations in cardiovascular, hematologic, immune, and genitourinary systems in a variety of settings. Additional instruction is provided for psychiatric disorders, and high-risk obstetrics. Teaching/learning concepts, advanced dosage calculations, nutrition, pharmacology, communication, cultural, and community concepts are integrated.

**NUR 203 Nursing Through the Lifespan III 4-6C-6**

PREREQUISITES: Successful completion of first, second, third and fourth term courses

CO-REQUISITES: NUR 204, Humanities elective

This course builds upon previous instruction and provides additional opportunities to develop competencies necessary to meet the needs of individuals throughout the lifespan in a safe, legal, and ethical manner using the nursing process. Students manage and provide collaborative care to clients who are experiencing selected alterations in cardiovascular, respiratory, and neurological systems in a variety of settings. Additional instruction is provided care for selected mental health disorders, selected emergencies, multiple organ dysfunction syndrome and related disorders. Teaching/learning concepts, advanced dosage calculations, nutrition, pharmacology, communication, cultural, and community concepts are integrated.

**NUR 204 Role Transition for the Registered Nurse 2-2(P3)-4**

PREREQUISITES: Successful completion of first, second, third and fourth term courses

CO-REQUISITES: NUR 203, Humanities elective

This course provides students with opportunities to gain knowledge and skills necessary to transition from student to registered nurse. Content includes current issues in health care, nursing leadership and management, professional practice issues for registered nurses, and transition into the workplace. Additional instruction is provided for preparing for the NCLEX-RN

**Office Administration (OAD)**

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**OAD 100 Introduction to Keyboarding and Technology 3-0-3**

This course is designed to enable the student to develop navigating windows and touch keyboarding skills for efficient use of microcomputer through classroom instruction and lab exercises. Upon completion, the student should be able to demonstrate proper keying techniques and basic computer skills.

**OAD 101 Beginning Keyboarding 3-0-3**

PREREQUISITE: OAD 100 or high school keyboarding

This course is designed to enable the student to use the touch method of keyboarding through classroom instruction and outside lab. Emphasis is on speed and accuracy in keying alphabetic, symbol, and numeric information using a keyboard. Upon completion, the student should be able to demonstrate proper technique and an acceptable rate of speed and accuracy, as defined by the course syllabus, in the production of basic business documents such as memoranda, letters, reports, etc.

**OAD 103 Intermediate Keyboarding 3-0-3**

PREREQUISITE: OAD 101 or permission of the instructor

This course is designed to assist the student in increasing speed and accuracy using the touch method of keyboarding through classroom instruction and lab exercises. Emphasis is on the production of business documents such as memoranda, letters, reports, tables, and outlines from unarranged rough draft to acceptable format. Upon completion, the student should be able to demonstrate proficiency and an acceptable rate of speed and accuracy, as defined by the course syllabus, in the production of business documents.

**OAD 104 Advanced Keyboarding 3-0-3**

PREREQUISITE: OAD 103

This course is designed to assist the student in continuing to develop speed and accuracy using the touch method of keyboarding through classroom instruction and lab exercises. Emphasis is on the production of business documents using decision-making skills. Upon completion, the student should be able to demonstrate proficiency and an acceptable rate of speed and accuracy, as defined by the course syllabus, in the production of high-quality business documents.

**OAD 110 Computer Navigation 3-0-3**

This course is designed to introduce the student to the MS Windows® environment through classroom instruction. Emphasis is on Windows as a graphical user interface and includes operations and applications that use the windows environment. Upon completion, the student should be able to demonstrate proficiency in the operation and management of hardware and software as defined by the course syllabus.

**OAD 125 Word Processing** 3-0-3

PREREQUISITE: OAD 101 or permission of the instructor  
This course is designed to provide the student with basic word processing skills through classroom instruction and outside lab. Emphasis is on the utilization of software features to create, edit, and print common office documents. Upon completion, the student should be able to demonstrate the ability to use industry-standard software to generate appropriately formatted, accurate, and attractive business documents such as memoranda, letters, and reports.

**OAD 126 Advanced Word Processing** 3-0-3

PREREQUISITE: OAD 125 and OAD 101  
This course is designed to increase student proficiency in using the advanced word processing functions through classroom instruction and lab exercises. Emphasis is on the use of industry-standard software to maximize productivity. Upon completion, the student should be able to demonstrate the ability to generate advanced business documents.

**OAD 130 Electronic Calculations** 3-0-3

This course is designed to teach the numeric touch system and problem-solving techniques. Emphasis is on basic mathematical functions. Upon completion, the student should be able to demonstrate an acceptable rate of speed and accuracy, as defined by the course syllabus, to solve problems based on typical business applications.

**OAD 131 Business English** 3-0-3

This course is designed to develop the student's ability to use proper English. Emphasis is on grammar, spelling, vocabulary, punctuation, word usage, word division, and proofreading. Upon completion, the student should be able to communicate effectively.

**OAD 133 Business Communications** 3-0-3

PREREQUISITE: OAD 131 or permission of the instructor  
This course is designed to provide the student with skills necessary to communicate effectively. Emphasis is on the application of communication principles to produce clear, correct, logically-organized business communications. Upon completion, the student should be able to demonstrate effective communication techniques in written, oral, and nonverbal communications.

**OAD 134 Career and Professional Development** 3-0-3

PREREQUISITE: OAD 101 or permission of the instructor  
This course is designed to assist the student in preparing for employment. Emphasis is on developing resumes, improving interview techniques, participating in mock interviews, setting goals, conducting job searches, and improving personal and professional image. Upon completion, the student will be able to demonstrate confidence in seeking employment.

**OAD 135 Financial Record Keeping** 3-0-3

This course is designed to provide the student with an understanding of the accounting concepts, principles, and terminology. Emphasis is on the accounting cycle and equation as they relate to different types of business ownership. Upon completion, the student should be able to demonstrate accounting procedures used in a proprietorship, partnership, and corporation.

**OAD 138 Records/Information Management** 3-0-3

This course is designed to give the student knowledge about managing office records and information. Emphasis is on basic filing procedures, methods, systems, supplies, equipment, and modern technology used in the creation, protection, and disposition of records stored in a variety of forms. Upon completion, the student should be able to perform basic filing procedures.

**OAD 200 Machine Transcription** 3-0-3

PREREQUISITE: OAD 101, OAD 131, or permission of the instructor  
This course is designed to develop marketable skills in transcribing various forms of dictated material through classroom instruction. Emphasis is on the use of microcomputers and a commercial word processing package. Upon completion, the student should be able to accurately transcribe documents from dictated recordings.

**OAD 202 Legal Transcription** 3-0-3

PREREQUISITE: OAD 101 or permission of the instructor  
This course is designed to familiarize students with legal terms and provide transcription skill development in the production of legal correspondence, forms, and court documents through classroom instruction and lab exercises. Emphasis is on transcribing error-free legal documents using transcription equipment. Upon completion, students should be able to demonstrate the ability to accurately transcribe legal documents that are appropriately formatted.

**OAD 203 Legal Office Procedures** 3-0-3

PREREQUISITE: OAD 101 or permission of the instructor  
This course is designed to provide an awareness of the responsibilities and opportunities of professional support personnel in a legal environment through classroom instruction and lab exercises. Emphasis is on legal terminology, the production of appropriate forms and reports, and the importance of office procedures and practices. Upon completion, the student should be able to perform office support tasks required for employment in a legal environment.

**OAD 211 Medical Terminology** 3-0-3

This course is designed to familiarize the student with medical terminology. Emphasis is on the spelling, definition, pronunciation, and usage of medical terms. Upon completion, the student should be able to communicate effectively using medical terminology.

**OAD 212 Medical Transcription** 3-0-3

PREREQUISITE: OAD 200 and OAD 211, or permission of the instructor  
This course is designed to orient students to standard medical reports, correspondence, and related documents transcribed in a medical environment through classroom instruction. Emphasis is on transcribing medical records from dictated recordings. Learn/maintain standards of ethical/professional conduct. Upon completion, the student should be able to accurately transcribe medical documents from dictated recordings.

**OAD 214 Medical Office Procedures** 3-0-3

PREREQUISITE: OAD 101 or permission of the instructor

This course is designed to provide an awareness of the responsibilities and opportunities of professional support personnel in a medical environment through classroom instruction and lab exercises. Emphasis is on medical terminology, the production of appropriate forms and reports, and the importance of office procedures and practices. Upon completion, the student should be able to perform office support tasks required for employment in a medical environment.

**OAD 217 Office Management** 3-0-3

This course is designed to develop skills necessary for supervision of office functions. Emphasis is on issues relating to the combination of people and technology in achieving the goals of business in a culturally diverse workplace, including the importance of office organization, teamwork, workplace ethics, office politics, and conflict-resolution skills. Upon completion, the student should be able to demonstrate effective supervision in the modern office.

**OAD 218 Office Procedures** 3-0-3

PREREQUISITE: OAD 101

This course is designed to develop an awareness of the responsibilities and opportunities of the office professional through classroom instruction. Emphasis is on current operating functions, practices and procedures, work habits, attitudes, oral and written communications, and professionalism. Upon completion, the student should be able to demonstrate the ability to effectively function in an office support role.

**OAD 231 Office Applications** 3-0-3

This course is designed to provide the student with a foundation in the use of computerized equipment and application software as tools in the performance of a variety of office tasks through classroom instruction and lab exercises. Emphasis is on the role of the office professional in the selection and application of appropriate technology to the specific task or combination of tasks. Upon completion, the student should be able to demonstrate proficiency in the selection of appropriate computerized tools to complete designated tasks.

**OAD 233 Trends in Office Technology** 3-0-3

This course is designed to provide the student with a foundation in the use of computerized equipment and application software as tools in the performance of a variety of office tasks through classroom instruction and lab exercises. Emphasis is on the role of the office professional in the selection and application of appropriate technology to the specific task or combination of tasks. Upon completion, the student should be able to demonstrate proficiency in the selection of appropriate computerized tools to complete designated tasks.

## Orientation Degree (ORI)

**ORI 101 Orientation to College** 1-0-1

This course aids new students in their transition to the institution; exposes new students to the broad educational opportunities of the institution and integrates new students into the life of the institution.

## Orientation Non-Degree (ORT)\*

**+ORT 100 Orientation for Career Students** 1-0-1

This course is designed to introduce the beginning student to college. College policies and regulations are covered as well as stress management, resume preparation, job application procedures, and employment interviewing techniques.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Outdoor Leadership (ODL)

**ODL 121 Introduction to Outdoor Leadership** 3-0-3

This course presents a survey of the history and theory of experiential learning. Emphasis is placed on the historical origins of pragmatism as well as such programs as Scouting, the Outward Bound movement in Europe and America, the National Outdoor Leadership School, and Project Adventure. This course should be taken the same semester as PED 256 and either PED 236 or PED 226.

**ODL 200 Outdoor Leadership Field Experience** 1-1/2/4-1/2/3

Course credit is awarded for participation in an outdoor adventure program off-campus. The type of course and experience must be approved by the faculty. Additional assignments and requirements may be a part of this course.

**ODL 221 Internship in Outdoor Leadership** 1-4-3

This course offers practical experience in outdoor leadership through working on the staff of any of the various camping, canoeing, or rock climbing courses offered through the Physical Education Department. Additional requirements may be a part of this course.

**ODL 260 Practicum in Teaching Outdoor Leadership** 1-4-3

PREREQUISITE: ODL 200 and permission of the instructor. This course offers practical experience as a leader of small groups who are participating in PED 226 and PED 246 or PED 246 and PED 236. Additional assignments and requirements may be a part of this course.

**+ODL 299 Pro-Seminar in Outdoor Leadership** 1-4-3

This course features readings and discussions of the history and philosophy of outdoor education. Focus will be on the linkages between outdoor studies and trends in modern philosophy and practices. This course is offered when there is sufficient demand.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Philosophy (PHL)

**+PHL 106 Introduction to Philosophy** 3-0-3  
This course is an introduction to the basic concepts of philosophy. The literary and conceptual approach of the course is balanced with emphasis on approaches to ethical decision making. The student should have an understanding of major philosophical ideas in a historical survey from the early Greeks to the modern era.

**+PHL 206 Ethics and Society** 3-0-3  
This course involves the study of ethical issues which confront individuals in the course of their daily lives. The focus is on the fundamental questions of right and wrong, of human rights, and of conflicting obligations. The student should be able to understand and be prepared to make decisions in life regarding ethical issues.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Physical Education (PED)

Availability of courses in this program is dependent upon student enrollment, except for PED 103, PED 104, PED 105, PED 118, and PED 119. See master schedule of classes or advisor for further information.

**PED 101 Slimnastics (Beginning)** 0-2-1  
This course provides an individualized approach to physical fitness, wellness, and other health-related factors. Emphasis is placed on the scientific basis for setting up and engaging in personalized physical fitness programs. Upon completion, students should be able to set up and implement an individualized physical fitness program.

**PED 102 Slimnastics (Intermediate)** 0-2-1  
This course is an intermediate-level slimnastics class. Topics include specific exercises contributing to fitness and the role exercise plays in developing body systems, nutrition, and weight control. Upon completion, students should be able to implement and evaluate an individualized physical fitness program.

**PED 103 Weight Training (Beginning)** 0-2-1  
This course introduces the basics of weight training. Emphasis is placed on developing muscular strength, muscular endurance, and muscle tone. Upon completion, students should be able to establish and implement a personal eight training program.

**PED 104 Weight Training (Intermediate)** 0-2-1  
This course covers advanced levels of weight training. Emphasis is placed on meeting individual training goals and addressing weight training needs and interests. Upon completion, students should be able to establish and implement an individualized advanced weight training program.

**PED 105 Personal Fitness** 0-2-1  
This course is designed to provide the student with information allowing him/her to participate in a personally developed fitness program. Topics include cardiovascular, strength, muscular endurance, flexibility and body composition.

**PED 106 Aerobics** 0-2-1  
This course introduces a program of cardiovascular fitness involving continuous, rhythmic exercise. Emphasis is placed on developing cardiovascular efficiency, strength, and flexibility and on safety precautions. Upon completion, students should be able to select and implement a rhythmic aerobic exercise program.

**PED 107 Aerobics Dance (Beginning)** 0-2-1  
PREREQUISITE: PED 106 or permission of the instructor.  
This course introduces the fundamentals of step and dance aerobics. Emphasis is placed on basic stepping up, basic choreographed dance patterns, and cardiovascular fitness; and upper body, floor, and abdominal exercises. Upon completion, students should be able to participate in basic dance aerobics.

**PED 108 Aerobics Dance (Intermediate)** 0-2-1  
PREREQUISITE: PED 107 or permission of the instructor.  
This course provides a continuation of step aerobics. Emphasis is placed on a wide variety of choreographed step and dance patterns; cardiovascular fitness; and upper body, abdominal, and floor exercises. Upon completion, students should be able to participate in and design an aerobics routine.

**PED 109 Jogging** 0-2-1  
This course covers the basic concepts involved in safely and effectively improving cardiovascular fitness. Emphasis is placed on walking, jogging, or running as a means of achieving fitness. Upon completion, students should be able to understand and appreciate the benefits derived from these activities.

**PED 118 General Conditioning (Beginning)** 0-2-1  
This course provides an individualized approach to general conditioning utilizing the five major components. Emphasis is placed on the scientific basis for setting up and engaging in personalized physical fitness and conditioning programs. Upon completion, students should be able to set up and implement an individualized physical fitness and conditioning program.

**PED 119 General Conditioning (Intermediate)** 0-2-1  
PREREQUISITE: PED 118 or permission of the instructor.  
This course is an intermediate-level fitness and conditioning program class. Topics include specific exercises contributing to fitness and the role exercise plays in developing body systems. Upon completion, students should be able to implement and evaluate an individualized physical fitness and conditioning program.

**PED 123 Golf (Beginning)** 0-2-1  
This course emphasized the fundamentals of golf. Topics include the proper grips, stance, alignment, swings for the short and long game, putting, and the rules and etiquette of golf. Upon completion, students should be able to perform the basic golf shots and demonstrate a knowledge of the rules and etiquette of golf.

**PED 124 Golf (Intermediate)** 0-2-1  
PREREQUISITE: PED 123 or permission of the instructor.  
This course covers the more advanced phases of golf. Emphasis is placed on refining the fundamental skills and learning more advanced phases of the games such as club selection, trouble shots, and course management. Upon completion, students should be able to demonstrate the knowledge and ability to play a recreational round of golf.

**PED 133 Tennis (Beginning)** 0-2-1  
This course emphasized the fundamentals of tennis. Topics include basic strokes, rules, etiquette, and court play. Upon completion, students should be able to play recreational tennis.

**PED 134 Tennis (Intermediate)** 0-2-1  
PREREQUISITE: PED 133 or permission of the instructor.  
This course emphasizes the refinement of playing skills. Topics include continuing the development of fundamentals, learning advanced serves, and strokes and pace and strategies in singles and doubles play. Upon completion, students should be able to play competitive tennis.

**PED 171 Basketball (Beginning)** 0-2-1  
This course covers the fundamentals of basketball. Emphasis is placed on skill development, knowledge of the rules, and basic game strategy. Upon completion, students should be able to participate in recreational basketball.

**PED 172 Basketball** 0-2-1  
PREREQUISITE: PED 171 or permission of the instructor.  
This course covers more advanced basketball techniques. Emphasis is placed on refining skills and developing more advanced strategies and techniques. Upon completion, students should be able to play basketball at a competitive level.

**PED 176 Volleyball (Beginning)** 0-2-1  
This course covers the fundamentals of volleyball. Emphasis is placed on the basics of serving, passing, setting, spiking, blocking, and the rules and etiquette of volleyball. Upon completion, students should be able to participate in recreational volleyball.

**PED 177 Volleyball (Intermediate)** 0-2-1  
PREREQUISITE: PED 176 or permission of the instructor.  
This course covers more advanced volleyball techniques. Emphasis is placed on refining skills and developing more advanced strategies and techniques. Upon completion, students should be able to participate in competitive volleyball.

**PED 180 Flag Football** 0-2-1  
This course introduces the fundamentals and rules of flag football. Emphasis is placed on proper techniques and strategies for playing in game situations. Upon completion, students should be able to participate in recreational flag football.

**PED 186 Softball (Beginning)** 0-2-1  
This course introduces the fundamental skills and rules of softball. Emphasis is placed on proper techniques and strategies for playing softball. Upon completion, students should be able to participate in recreational softball.

**PED 187 Softball (Intermediate)** 0-2-1  
This course presents advanced skills and competitive practice in softball. Emphasis is placed on proper techniques and strategies for playing softball. Upon completion, students should be able to participate in competitive softball.

**PED 188 Yoga**  
This course introduces basic instruction in yoga for beginners. Emphasis is placed on instruction in gentle stretching, breathing practices, progressive deep relaxation, and posture. Upon completion, students should be able to participate in and appreciate the benefits of the activity.

**PED 200 Foundations of Physical Education** 3-0-3  
In this course, the history, philosophy, and objectives of health, physical education, and recreation are studied with emphasis on the physiological, sociological, and psychological values of physical education. It is required of all physical education majors.

**PED 216 Sports Officiating** 3-0-3  
This course surveys the basic rules and mechanics of officiating a variety of sports, including both team and individual sports. In addition to classwork, students will receive at least 3 hours of practical experience in officiating.

**PED 226 Hiking** 0-2-1  
This course provides instruction on how to equip and care for oneself on the trail. Topics include clothing, hygiene, trail ethics, and necessary equipment. Upon completion, students should be able to successfully participate in nature trail hikes.

**PED 236 Canoeing** 0-2-1  
This course provides basic instruction for the beginning canoeist. Emphasis is placed on safe and correct handling of the canoe and rescue skills. Upon completion, students should be able to demonstrate basic canoeing, safe-handling, and self-rescue skills.

**PED 246 Camping** 0-2-1  
This course is designed to acquaint the beginning camper with outdoor skills. Topics include camping techniques such as cooking and preserving food, safety, and setting up camp. Upon completion, students should be able to set up camp sites in field experiences using proper procedures.

**PED 251 Varsity Basketball** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course covers advanced fundamentals of basketball. Emphasis is placed on skill development, knowledge of the rules, and basic game strategy. Upon completion, students should be able to participate in competitive basketball.

**PED 252 Varsity Baseball** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course covers advanced baseball techniques. Emphasis is placed on refining skills and developing more advanced strategies and techniques. Upon completion, students should be able to play baseball at a competitive level.

**PED 253 Varsity Golf** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course covers the more advanced phases of golf. Emphasis is placed on refining the fundamental skills and learning more advanced phases of the games such as club selection, trouble shots, and course management. Upon completion, students should be able to demonstrate the knowledge and ability to play competitive golf.

**PED 254 Varsity Softball** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course introduces the fundamental skills and rules of softball. Emphasis is placed on proper techniques and strategies for playing softball. Upon completion, students should be able to play competitive softball.

- PED 255 Varsity Tennis** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course emphasized the refinement of playing skills. Topics include continuing the development of fundamentals, learning advanced serves, and strokes and pace and strategies in singles and doubles play. Upon completion, students should be able to play competitive tennis.
- PED 256 Varsity Track** 0-2-1  
PREREQUISITE: Permission of the instructor.
- PED 257 Varsity Cheerleading** 0-2-1  
PREREQUISITE: Permission of the instructor.
- PED 258 Varsity Volleyball** 0-2-1  
PREREQUISITE: Permission of the instructor.  
This course covers more advanced volleyball techniques. Emphasis is placed on refining skills and developing more advanced strategies and techniques. Upon completion, students should be able to participate in competitive volleyball.
- PED 259 Varsity Cross Country** 0-2-1  
PREREQUISITE: Permission of the instructor.

## Physical Science (PHS)

- +PHS 111 Physical Science I** 3-2-4  
This course provides the non-technical student with an introduction to the basic principles of geology, oceanography, meteorology, and astronomy. Laboratory is required.
- +PHS 112 Physical Science II** 3-2-4  
PREREQUISITE: MTH 098 or math placement score.  
This course provides the non-technical student with an introduction to the basic principles of chemistry and physics. Laboratory is required.  
NOTE: PHS 112 may be taken before PHS 111.
- +PHS 120 Environmental Science** 3-2-4  
This course is an interdisciplinary course designed to give the non-science major an introductory survey of the environment. The environment will be studied with an emphasis on topics such as air, soil, water, wild life, forestry, and solid waste pollution. Laboratory is required and will emphasize field studies and experimentation.
- +Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Physics (PHY)

- +PHY 115 Technical Physics** 3-2-4  
PREREQUISITE: MTH 100 or MTH 103.  
Technical physics is an algebra-based physics course designed to utilize modular concepts to include: motion, forces, torque, work energy, heat, wave/sound, light and electricity. Results of physics education research and physics applications in the workplace are used to improve the student's understanding of physics in technical areas. Upon completion, students will be able to: define motion and describe specific module concepts; utilize microcomputers to generate motion diagrams; understand the nature of contact forces and distinguish passive forces; work cooperatively to set-up laboratory exercises; and demonstrate applications of module-specific concepts.

- +PHY 120 Introduction to Physics** 3-2-4  
PREREQUISITE: MTH 098.  
This course provides an introduction to general physics for non science majors. Topics include fundamentals of mechanics, properties of matter, heat and temperature, electricity and magnetism, optics and modern physics. Laboratory is required. Offered upon sufficient enrollment.
- +PHY 201 General Physics I - Trig Based** 3-2-4  
PREREQUISITE: MTH 113 or equivalent, or permission of the instructor.  
This course is designed to cover general physics at a level that assumes previous exposure to college algebra and basic trigonometry. Specific topics include mechanics, properties of matter and energy, thermodynamics, and periodic motion. A laboratory is required.
- +PHY 202 General Physics II - Trig Based** 3-2-4  
PREREQUISITE: PHY 201.  
This course is designed to cover general physics using college algebra and basic trigonometry. Specific topics include wave motion, sound, light optics, electrostatics, circuits, magnetism, and modern physics. Laboratory is required.

**+PHY 205 Resitation in Physics I** 1:1/0/1  
This course will meet one hour weekly purely for problem solving. This course should be taken with PHY 201.

**+PHY 206 Resitation in Physics II** 1:1/0/1  
This course will meet one hour weekly purely for problem solving. This course should be taken with PHY 202.

**PHY 213 General Physics with Calculus I** 3-2-4  
PREREQUISITE: MTH 125 or permission of the instructor.  
This course provides a calculus-based treatment of the principle subdivisions of classical physics: mechanics and energy including Thermo-dynamics. Laboratory is required.

**+PHY 214 General Physics with Calculus II** 3-2-4  
PREREQUISITE: PHY 213.  
This course provides a calculus-based study in classical physics. Topics included are: simple harmonic motion, waves, sound, light, optics, electricity and magnetism. Laboratory is required.

**+PHY 215 Resitation in Physics with Calculus I** 1:1/0/1  
This course will meet one hour weekly purely for problem solving. This course should be taken with PHY 213.

**+PHY 216 Resitation in Physics with Calculus II** 1:1/0/1  
This course will meet one hour weekly purely for problem solving. This course should be taken with PHY 214.

**+PHY 299 Directed Studies in Physics** 1/2-0-1/2

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Political Science (POL)

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

### **POL 211 American National Government** 3-0-3

This course surveys the background, constitutional principles, organization, and operation of the American political system. Topics include the U. S. Constitution, federalism, civil liberties, civil rights, political parties, interest groups, political campaigns, voting behavior, elections, the presidency, bureaucracy, Congress, and the justice system. Upon completion, students should be able to identify and explain relationships among the basic elements of American government and function as more informed participants of the American political system.

### **POL 220 State and Local Government** 3-0-3

This course is a study of the forms of organization, functions, institutions, and operation of American state and local governments. Emphasis is placed on the variety of forms and functions of state and local governments, with particular attention to those in Alabama and to the interactions between state and local government and the national government. Upon completion, students should be able to identify elements of and explain relationships among the state, local, and national governments of the U.S., and function as more informed participants of state and local political systems.

### **POL 299 Directed Studies** 0-0-1/3\*

PREREQUISITE: Recommendation of the instructor and approval of Department Chairperson.

This course provides opportunities for non-traditional exploration of selected topics in political science. Emphasis is placed on knowledge and experience students gain through learning activities such as guided reading, internships, and programs combining personal experience with related intensive study. Upon completion, students should be able to prepare papers, presentations, or other projects on approved topics related to their individual experiences.

\*Credit to be determined from appropriate contact-to-credit ratio formula.

## Psychology (PSY)

### **PSY 106 Career Exploration** 1-0-1

This course is designed for students to explore potential career fields. This course includes an assessment, through testing of strengths and weaknesses, general information about careers and job skills, value and decision making techniques, and a career research.

### **PSY 107 Study Skills** 1-0-1

In this course, emphasis is placed on the skills of "how to study." The course introduces the student to effective techniques for listening in class, note taking, preparation for test taking, and an overall system of successful study.

### **PSY 110 Personal Development** 3-0-3

This is a structured group experience that emphasizes effective living through developing one's own internal resources. Topics included are self programmed control, relaxation training, and interpersonal skills. The course is designed to translate other life skills into successful college adjustment. Study skills, library skills, and life planning are also discussed. This course may not transfer to some four year institutions.

### **PSY 200 General Psychology** 3-0-3

This course is a survey of behavior with emphasis upon psychological processes. This course includes the biological bases for behavior, thinking, emotion, motivation, and the nature and development of personality.

### **+PSY 207 Psychology of Adjustment** 3-0-3

This course provides an understanding of the basic principles of mental health and an understanding of the individual modes of behavior.

### **PSY 210 Human Growth and Development** 3-0-3

PREREQUISITE: PSY 200.

This course is the study of the psychological, social, and physical factors that affect human behavior from conception to death.

### **+PSY 230 Abnormal Psychology** 3-0-3

PREREQUISITE: PSY 200.

This course is a survey of abnormal behavior and its social and biological origins. The anxiety related disorders, psychoses, personality disorders and mental deficiencies will be covered.

### **+PSY 270 Business and Industry Psychology** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is a study of interpersonal relations in the working environment, interpersonal communications, and techniques for selection and supervision of personnel.

### **+PSY 276 Human Relations** 3-0-3

PREREQUISITE: Permission of the instructor.

This course focuses on readings, inter- and intrapersonal experiences, individual testing, employer visits and open discussions. Its goal is to assist the student in making a successful transition from classroom to the world of work.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Reading (RDG)

### **RDG 083 Developmental Reading I** 3-0-3

This course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

### **RDG 084 Developmental Reading II** 3-0-3

PREREQUISITE: RDG 083 or equivalent placement score.

This course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

**RDG 085 Developmental Reading III** 3-0-3  
This course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

**+RDG 114 Critical Reading for College** 3-0-3  
PREREQUISITE: RDG 084, college test score placement or permission of the instructor.

This course is designed to enhance critical reading skills. Topics include vocabulary enrichment, reading flexibility, metacognitive strategies, and advanced comprehension skills, including analysis and evaluation. Upon completion, students should be able to demonstrate comprehension and analysis and respond effectively to material across disciplines.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Sociology (SOC)

**SOC 200 Introduction to Sociology** 3-0-3  
This course is an introduction to the vocabulary, concepts, and theory of sociological perspectives of human behavior.

**+SOC 208 Introduction to Criminology** 3-0-3  
This course delves into the nature and extent of crime in the United States, as well criminal delinquent behavior and theories of causation. The study includes criminal personalities, principles of prevention, control, and treatment.

**+SOC 209 Juvenile Delinquency** 3-0-3  
PREREQUISITE: SOC 200.  
This course examines the causes of delinquency. It also reviews programs of prevention, and control of juvenile delinquency as well as the role of the courts.

**SOC 210 Social Problems** 3-0-3  
PREREQUISITE: SOC 200.  
This course examines the social and cultural aspects, influences, incidences and characteristics of current social problems in light of sociological theory and research.

**SOC 247 Marriage and the Family** 3-0-3  
PREREQUISITE: SOC 200.  
This course is a study of family structures and families in a modern society. It covers preparation for marriage, as well as sociological, psychological, biological, and financial factors relevant to success in marriage and family life.

**+SOC 296 Directed Studies in Sociology** 1/3-0-1/3  
PREREQUISITE: SOC 200.  
This course provides students with opportunities to have "hands-on" experience with research methods used in the behavioral sciences or to complete directed readings under faculty supervision.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Spanish (SPA)

**SPA 101 Introductory Spanish I** 4-0-4  
This course provides an introduction to Spanish. Topics include the development of basic communication skills and the acquisition of basic knowledge of the cultures of Spanish-speaking areas.

**+SPA 102 Introductory Spanish II** 4-0-4  
PREREQUISITE: SPA 101 or equivalent. This continuation course includes the development of basic communication skills and the acquisition of basic knowledge of the cultures of Spanish-speaking areas.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Speech (SPH)

**SPH 107 Fundamentals of Public Speaking** 3-0-3  
PREREQUISITE: ENG 101 required; ENG 102 recommended.  
This course explores principles of audience and environment analysis as well as the actual planning, rehearsing and presenting of formal speeches to specific audiences. Historical foundations, communication theories and student performances are emphasized.

**+SPH 226 Business and Professional Speech** 3-0-3  
PREREQUISITE: ENG 101 required; ENG 130 or ENG 102 recommended.  
This course focuses on the fundamentals of speech applied to business and professional speech, reports, sales talks, conference, interviews, speeches of goodwill, speeches of inspiration and courtesy, and after dinner speeches.  
+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Theater Arts (THR)

**+THR 113 Theater Workshop I** 2-0-2  
This is the first in a six-course sequence which provide practical experience in the production and performance of a dramatic presentation with assignments in scenery, lighting, props, choreography, sound, costumes, make-up, publicity, acting, directing, and other aspects of theater production.

**+THR 114 Theater Workshop II** 2-0-2  
PREREQUISITE: THR 113.  
This course is a continuation of THR 113.

**+THR 115 Theater Workshop III** 2-0-2  
PREREQUISITE: THR 114.  
This course is a continuation of THR 114.

**+THR 120 Theater Appreciation** 3-0-3  
This course is designed to increase appreciation of contemporary theater. Emphasis is given to the theater as an art form through the study of history and theory of drama and its contributions to modern media. The course examines the roles of playwright, actor, director, designer and technician. Attendance at theater productions may be required.

- +THR 126 Introduction to Theater** 3-0-3  
This course is designed to teach the history of the theater and the principles of drama. It also covers the development of theater production and the study of selected plays as theatrical presentations.
- +THR 131 Acting Techniques I** 3-0-3  
This is the first of a two-course sequence in which the student will focus on the development of the body and voice as the performing instruments in acting. Emphasis is placed on pantomime, improvisation, acting exercises, a building characterizations in short acting scenes.
- +THR 132 Acting Techniques II** 3-0-3  
PREREQUISITE: THR 131.  
This course is a continuation of THR 131
- +THR 141 Introduction to Dance in Theater I** 1/2-0-1/2  
This is the first of a two-course sequence which offers the student an introduction to basic dance movements and the use of dance in dramatic productions.
- +THR 142 Introduction to Dance in Theater II** 1/2-0-1/2  
PREREQUISITE: THR 141.  
This course is a continuation of THR 141.
- +THR 213 Theater Workshop IV** 2-0-2  
PREREQUISITE: THR 115.  
This course is a continuation of THR 113-114-115.
- +THR 214 Theater Workshop V** 2-0-2  
PREREQUISITE: THR 213.  
This course is a continuation of THR 113, 114, 115.
- +THR 215 Theater Workshop VI** 2-0-2  
PREREQUISITE: THR 214.  
This course is a continuation of THR 113-114-115-214.
- +THR 216 Theatrical Make-Up** 2-0-2  
This course is a study of the materials and techniques of theatrical make-up.
- +THR 236 Stagecraft** 3-0-3  
This course is a study of the principles, techniques, and materials in theatrical scenery and lighting.
- +THR 266 Fundamentals of Directing** 3-0-3  
This course is designed to cover the fundamentals of directing. Instruction will include lectures, demonstration, written and oral analysis of scripts and performances.
- +THR 296 Directed Studies in Theater** 2-0-2  
This course deals with problems in theater and art management. Problems may be arranged in conjunction with other disciplines in the Fine Arts.
- +Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

## Upholstery (UPH)\*

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

- UPH 111 Upholstery Fundamentals and Design** 3-0-3  
This course is designed to introduce the student to a working knowledge of upholstery techniques and hands-on experience using the fundamentals of Upholstery/Design. Emphasis is placed on safety, upholstery terminology, housekeeping, tools, equipment, minor sewing machine repair, a brief history of furniture styles, color, fabrics, woods, and an introduction to principles and elements of furniture/automotive design. Upon completion, students should be able to cite the principles and elements of design and apply upholstery techniques in all areas specified to complete requirements of this course.
- UPH 112 Upholstery Design Furniture Lab** 0-9-3  
This course is designed to teach the student specific techniques and applications in furniture design foundations. Emphasis is placed on proper use, care, storage, and maintenance of tools and equipment and proper application of design techniques working with the function, beauty and individuality of a good design plan or foundation. Upon completion, students should be able to identify tools and equipment and apply foundations techniques including tying springs, applying stuffing and padding, and using a variety of materials to achieve a good design plan.
- UPH 113 Upholstery Design Auto Lab** 0-9-3  
This course provides an introduction to automotive techniques and design with application or live work projects. Emphasis is placed on the application of design techniques including working with springs, door panels, headliners, auto seating, rear shelves, carpet, windlace, arm rests, and dashboards. Upon completion, students should be able to perform hands-on upholstery techniques including design to automotive upholstery.
- UPH 122 Decorative Elements Furniture Lab** 0-9-3  
PREREQUISITE: Permission of the instructor.  
This course is designed to teach the student to use a layout in computing yardage and to plan decorative techniques to be used with furniture projects. Topics include layouts, planning, redesigning, use of decorative trims, yardage charts and accessories necessary to achieve a harmonious design. Upon completion, students should be able to execute plans, compute yardage, redesign furniture, and select decorative techniques and accessories to complete a design.
- UPH 123 Decorative Elements Auto Lab** 0-9-3  
This course is designed for instruction in using a layout to compute yardage and in planning decorative techniques which include windlace, hidem welt, various trims and finishing techniques. Upon completion, the student should be able to compute yardage from a well-planned layout and apply decorative techniques to the finished automotive upholstery project.

**UPH 131 Wood Repair and Refinishing** 1-5-3

PREREQUISITE: Permission of the instructor.

This course provides the students with skills necessary to repair or refinish antique woods, repair scars or scratches, and touch-up existing finishes. Topics covered in this course include tools, supplies, repairs, stains, sanding, refinishing products, and special techniques to restore a finish. Upon completion, students should be able to restore woods, replace broken parts, and refinish wood.

**UPH 132 History of Furniture Styles** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to teach the student to identify period furniture and some of the basics of styles using the vocabulary of furniture description. Topics include history of furniture, furniture facts, period furniture, furniture identification, and important trends, fabrics, motifs, woods, finishes, and styles. Upon completion, students should be able to identify furniture styles, periods, motifs, woods and finishes, and coordinate styles.

**UPH 183 Special Topics** 0-3-1

These courses are designed to allow the student to specialize in a particular area of study with minimum supervision in Upholstery/Design application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, furniture, or related area in Upholstery/Design. Upon completion, the student should be able to work with minimum supervision and execute the necessary techniques to finish a live work project of their choice.

**UPH 193 Co-op** 0-15-3

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**UPH 212 Design Interiors Furniture Lab** 0-3-3

This course is designed for instruction in applying the principles and elements of design when upholstering furniture and to create a unified design. Emphasis is placed on the use of appropriate fabrics, colors, textures, types of furniture, needs of customers, lifestyles, occupation, commercial or residential setting. Upon completion, a student should be able to identify elements of design and apply them to the principles of design in order to achieve a unified design which best suits the decor.

**UPH 213 Design Interiors Auto Lab** 0-9-3

PREREQUISITE: Permission of the instructor.

This course is designed to instruct the student to apply the principles and elements of design when upholstering automobiles and to create a unified design. Emphasis is placed on the use of appropriate fabrics, colors, textures, types of automobiles, needs of customers, and purpose for which the vehicle is being upholstered. Upon completion, students should be able to identify elements of design and apply them to the principles of design in order to achieve a unified design which best suits the automobile decor.

**UPH 215 Shop Management and Layout** 3-0-3

PREREQUISITE: Permission of the instructor.

This course is designed to provide the student with necessary information to operate and manage an upholstery business. Emphasis is placed on shop layouts, necessary equipment, supplies, tax information, setting up an accounting system, and managing work loads and inventory control in a simulated working atmosphere. Upon completion, students should be able to layout, perform stock set-up, and manage an upholstery business.

**UPH 217 Draperies, Cornices, Bedding** 1-1-3

This course is designed to teach the student to construct the most up-to-date crafts/accessories in upholstery. Emphasis is placed on creating patterns, designing crafts, using various fabrics, and identifying a list of new crafts using upholstery materials. Upon completion, students should be able to design upholstery crafts/accessories, create patterns, and use various fabrics.

**UPH 218 Embroidery Design** 1-1-3

This course is designed to introduce students to basic techniques of machine embroidery using an embroidery machine, computer, and embroidery software. Upon completion of the course, the student should be able to use embroidery software and an embroidery machine to design projects for various mediums.

**UPH 221 Automotive Upholstery & Design** 3-0-3

This course is designed to introduce the student to several different types of automobile interior designs. Topics covered include fabric, vinyl and leather seat inserts, sheared and loop carpet, headliners, and interior panels. Upon completion, students should be able to select suitable materials and complete an automotive upholstery project using a style of their choice.

**UPH 223 Interior Materials-Auto** 1-5-3

PREREQUISITE: Permission of the instructor.

This course is designed to teach the student to use interior materials available in the ever-changing industry of automotive upholstery. Emphasis is placed on design, color, pattern, texture, type of vehicle, and durability of fabric to be used in customizing or restoring a vehicle to its original status. Upon completion, students should be able to select materials, match colors, choose suitable patterns, search for new materials, repair damaged materials, and contour new designs.

**UPH 224 Auto Upholstery Design  
Experimental Lab** 0-6-3

PREREQUISITE: Permission of the instructor.

This course is an experimental lab in Automotive Upholstery/Design. It consists of demonstrations by the instructor and experimentation by students. Upon completion, students should be able to apply appropriate techniques in Automotive Upholstery/Design.

**UPH 225 Advanced Furniture Techniques** 1-5-3

PREREQUISITE: Permission of the instructor.

This course is designed for instruction in advanced techniques of furniture coverings and designs. Emphasis is placed on advanced cushion making, diamond tufting, redesigning furniture frames, redesigning coverings, advanced skirts, headboards, and other specific projects. Upon completion, students should be able to perform advanced skills necessary to complete furniture redesigns and coverings.

**UPH 226 Advanced Automotive Techniques** 1-5-3

PREREQUISITE: Permission of the instructor.

This course is designed to instruct the student in advanced automotive techniques necessary to perform skills to complete jobs. Emphasis is placed on tuck and roll, customization, convertible tops, and specialized techniques in boat seats, boat carpeting, tarps, and recreational vehicles. Upon completion, students should be able to apply advanced techniques and skills in any aspect of automotive upholstery.

**UPH 227 Quilting Techniques and Design** 1-1-3

This course is designed to introduce the student to basic techniques in quilt design. Emphasis is placed on selecting colors, fabrics and patterns, piecing, marking appliques, assembling quilt blocks, using a quilting machine, and using quilting techniques as applied to upholstery. Upon completion, the student should be able to select colors and fabrics, assemble quilt pieces in a design, use appliques, and use basic techniques of quilting in upholstery projects.

**UPH 281 Special Topics** 0-9-3

These courses are designed to allow the student to specialize in a particular area of study with minimum supervision in Upholstery/Design application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, furniture, or related area in Upholstery/Design. Upon completion, the student should be able to work with minimum supervision and execute the necessary techniques to finish a live work project of their choice.

**UPH 291 Co-op** 0-15-3

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**UPH 292 Co-op** 0-15-3

This course provides work experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

## Water and Wastewater (WMT)

**+WMT 100 Water Supply and Wastewater Control** 3-0-3

This course is designed to familiarize the student with water supply and wastewater control. Emphasis is on the engineering aspects of water supply, water distribution, wastewater collection, and wastewater treatment and disposal. Upon completion, students should be able to apply engineering and scientific concepts and principles of water supply and wastewater control.

**+WMT 101 Introduction to Water Treatment Processes** 3-0-3

This course is designed to train prospective water treatment plant operators and managers in the practical aspects of operating and maintaining water treatment plants, with emphasis on the use of safe practices and procedures. Students will learn how to safely operate and maintain coagulation, flocculation, sedimentation, filtration, and disinfection processes. They will also learn how to control tastes and odors in drinking water, control corrosion to meet the requirements of the Lead and Copper Rule, perform basic water laboratory procedures, and solve arithmetic problems commonly associated with water treatment plant operations.

**+WMT102 Introduction to Wastewater Treatment Processes** 3-0-3

This course is designed to train prospective wastewater treatment plant operators and managers in the practical aspects of operating and maintaining wastewater treatment plants, with emphasis on the use of safe practices and procedures. Students will learn how to safely operate and maintain racks, screens, comminutors, sedimentation tanks, trickling filters, rotating biological contactors, package activated sludge plants, oxidation ditches, ponds, and chlorination facilities. Students will also learn how to analyze and solve operational problems and how to perform mathematical calculations relating to wastewater treatment process control.

**+WMT111 Electrical and Mechanical Systems I** 3-2-4

This course deals with pumps, generators, engines, meters, valves, and their related monitoring, safety, as they relate to treatment systems. Topics include an overview of electricity and electronics, hydraulics, and flow monitoring systems. Upon completion, students should be able to explain safety in treatment operations and the safe operations of these systems.

**+WMT112 Electrical and Mechanical Systems II** 3-2-4

This course is a continuation of WMT 111 which focuses on systems and their networkings. Upon completion, students should be able to explain these systems, their function, and their problems in the industrial setting.

**+WMT118 Public and Industrial Safety** 3-0-3

This course is an overview of public and industrial safety issues related to industrial wastewater treatment. Topics include an in-depth study of laws and regulations and monitoring and alarm systems. Upon completion the student should be able to develop an area safety plan.

**+WMT120 Sanitary Chemistry and Biology** 3-0-3

This course is designed to acquaint the student with the fundamentals of microbiology and chemistry applicable to water and wastewater management. Emphasis is on laboratory procedures pertinent to water/wastewater treatment. Upon completion, students should be able to perform relevant laboratory procedures.

**+WMT121 Water Analysis and Conversion** 3-2-4

The course represents an in-depth study of treatment processes such as separation and conversion. Topics include toxicity analysis related to specific industries and how each industrial setting presents unique problems to be assessed, analyzed, and treated. Upon completion, students should be able to develop a treatment process plan for related industries.

**+WMT201 Advanced Water Treatment Processes**

3-0-3

This course is a continuation of WMT 101 and is designed to train prospective water treatment plant operators and managers in the practical aspects of operating and maintaining water treatment plants, with emphasis on the use of safe practices and procedures. Information is presented on drinking water regulations (including the Safe Drinking Water Act), iron and manganese control, fluoridation, softening, trihalomethanes, demineralization, handling and disposal of process wastes, maintenance, instrumentation, and advanced laboratory procedures.

**+WMT202 Advanced Wastewater Treatment Processes**

3-0-3

PREREQUISITE: WMT 102

This course is a continuation of WMT 102 and is designed to train prospective wastewater treatment plant operators and managers in the practical aspects of operating and maintaining wastewater treatment plants, with emphasis on the use of safe practices and procedures. Topics covered include conventional activated sludge processes, sludge digestion and solids handling, effluent disposal, plant safety and good housekeeping, plant and equipment maintenance, laboratory procedures and chemistry, use of computers of plant operation and maintenance, analysis and presentation of data, and records and report writing. Students will also learn how to analyze and solve operational problems and how to perform the mathematical calculations relating to wastewater treatment process control.

**+WMT 210 Treatment Design**

3-0-3

This course represents an in-depth look at treatment operations designed to remediate specific problems of industrial wastewater. Topics will include individual case studies as student projects to allow application of learning to actual real-life situations. Upon completion the student should be able to design a treatment plant process for a specific application.

**+WMT 211 Biological Remediation**

3-2-4

This course represents a review of the types of biological remediation currently used and those under study at research facilities. Topics will include specific applications and studies of local biological research to enhance student knowledge of this method of treatment and remediation. Upon completion, students should be able to analyze advantages and disadvantages of types of biological treatment for different industries.

**+WMT 213 Water and Wastewater Instrumentation and Controls**

3-0-3

This course focuses on the basic fundamentals of instrumentation applicable to water and wastewater management. The application, maintenance, and calibration of instruments in water and wastewater systems are emphasized. Upon completion, students should be able to read, calibrate and maintain mechanical, electrical, hydraulic, and pneumatic sensing equipment; and indicating, recording, and control equipment.

**+WMT214 Basic Hydraulics for Water and Wastewater Technology**

3-0-3

This course is designed to provide the student with an understanding of practical hydraulic design related to water supply and wastewater control. Topics include the collection, treatment, and distribution of water and collection and treatment of domestic and industrial wastewater. Upon completion, students should be able to apply principles of hydraulic systems to water and wastewater management practices.

**+WMT 290 Industrial Internship I**

0-15-3

This course is designed to allow a student first-hand experience in an industrial wastewater facility or a research facility. These placements will be coordinated through the wastewater treatment program and may include compensated or uncompensated placement.

**+WMT291 Municipal Internship**

0-15-3

This course is designed to allow a student first-hand experience in a municipal wastewater facility or a research facility. These placements will be coordinated through the wastewater treatment program and may include compensated or uncompensated placement.

+Availability of this course is dependent upon sufficient demand. See master schedule of classes or advisor for further information.

**Welding (WDT)\***

Availability of courses in this program is dependent upon student enrollment. See master schedule of classes or advisor for further information.

**WDT 108 SMAW Fillet/OFC**

3-0-3

This course provides the student with instruction on safety practices and terminology in the Shielded Metal Arc Welding (SMAW) process. Emphasis is placed on safety, welding terminology, equipment identification, set-up and operation, and related information in the SMAW process. This course also covers the rules of basic safety and identification of shop equipment and provides the student with the skills and knowledge necessary for the safe operation of oxy-fuel cutting.

**WDT 109 SMAW Fillet/PAC/CAC**

3-0-3

This course provides the student with instruction on safety practices and terminology in the Shielded Metal Arc Welding (SMAW) process. Emphasis is placed on safety, welding terminology, equipment identification, set-up and operation, and related information in the SMAW process. This course also covers the rules of basic safety and identification of shop equipment and provides the student with the skills and knowledge necessary for the safe operation of carbon arc cutting and plasma arc cutting.

**WDT 110 Industrial Blueprint Reading**

3-0-3

This course provides students with the understanding and fundamentals of industrial blueprint reading. Emphasis is placed on reading and interpreting lines, views, dimensions, weld joint configurations and weld symbols. Upon completion, students should be able to interpret welding symbols and blueprints as they apply to welding and fabrication.

**WDT 115 GTAW Carbon Pipe Theory** 3-0-3

This course is designed to provide the student with the practices and procedures of welding carbon steel pipe using the gas tungsten arc weld (GTAW) process. Emphasis is placed on pipe positions, filler metal selection, purging gasses, joint geometry, joint preparation, and fit-up. Upon completion, students should be able to identify pipe positions, filler metals, purging gas, proper joint geometry, joint preparation, and fit-up to the applicable code.

**WDT 119 Gas Metal Arc/Flux Cored Arc Welding Theory** 3-0-3

This course introduces the student to the gas metal arc and flux cored arc welding process. Emphasis is placed on safe operating practices, handling and storage of compressed gasses, process principles, component identification, various welding techniques and base and filler metal identification.

**WDT 120 Shielded Metal Arc Welding Groove Theory** 3-0-3

This course provides the student with instruction on joint design, joint preparation, and fit-up of groove welds in accordance with applicable welding codes. Emphasis is placed on safe operation, joint design, joint preparation, and fit-up. Upon completion, students should be able to identify the proper joint design, joint preparation and fit-up of groove welds in accordance with applicable welding codes.

**WDT 122 SMAW Fillet/OFC Lab** 0-3-3

This course is designed to introduce the student to the proper set-up and operation of the shielded metal arc welding equipment. Emphasis is placed on striking and controlling the arc, and proper fit up of fillet joints. This course is also designed to instruct students in the safe operation of oxy-fuel cutting. Upon completion, students should be able to make fillet welds in all positions using electrodes in the F-3 groups in accordance applicable welding code and be able to safely operate oxy-fuel equipment and perform those operations as per the applicable welding code.

**WDT 123 SMAW Fillet/PAC/CAC Lab** 0-3-3

This course is designed to introduce the student to the proper set-up and operation of the shielded metal arc welding equipment. Emphasis is placed on striking and controlling the arc, and proper fit up of fillet joints. This course is also designed to instruct students in the safe operation of plasma arc and carbon arc cutting. Upon completion, students should be able to make fillet welds in all positions using electrodes in the F-4 groups in accordance applicable welding code and be able to safely operate plasma arc and carbon arc equipment and perform those operations as per the applicable welding code.

**WDT 124 Gas Metal Arc/Flux Cored Arc Welding Lab** 0-3-3

This course provides instruction and demonstration using the various transfer methods and techniques to gas metal arc and flux cored arc welds. Topics included are safety, equipment set-up, joint design and preparation, and gases.

**WDT 125 Shielded Metal Arc Welding Groove Lab** 0-3-3

This course provides instruction and demonstration in the shielded metal arc welding process on carbon steel plate with various size F3 and F4 group electrodes in all positions. Emphasis is placed on welding groove joints and using various F3 and F4 group electrodes in all positions. Upon completion, the student should be able to make visually acceptable groove weld joints in accordance with applicable welding codes.

**WDT 155 GTAW Carbon Pipe Lab** 0-3-3

This course is designed to provide the student with skills in welding carbon steel pipe with gas tungsten arc weld techniques in various pipe weld positions. Upon completion, students should be able to perform gas tungsten arc welding on carbon steel pipe with the prescribed filler metals in various positions in accordance with the applicable code.

**WDT 160 Robotics Lab I** 1-2-3

This course is the practical application of robotics theory. Students will complete machine origins, robotic programming, robotic welding parameters, link programs to create jobs, and allocate a weave start.

**WDT 182 Special Topics** 3-0-3

This course allows the student to plan, execute, and present results of individual projects in welding. Emphasis is placed on enhancing skill attainment in the welding field. The student will be able to demonstrate and apply competencies identified and agreed upon between the student and instructor.

**WDT 184 Special Topics** 1-1-1

This course allows the student to plan, execute, and present results of individual projects in welding. Emphasis is placed on enhancing skill attainment in the welding field. The student will be able to demonstrate and apply competencies identified and agreed upon between the student and instructor.

**WDT 193 Co-op** 0-3-3

This course constitutes a series wherein the student works on a part-time basis in a job directly related to welding. In these courses the employer evaluates the student's productivity and the student submits a descriptive report of his work experiences. Upon completion, the student will demonstrate skills learned in an employment setting.

**WDT 217 SMAW Carbon Pipe Theory** 3-0-3

This course introduces the student to the practices and procedures of welding carbon steel pipe using the shielded metal arc weld (SMAW) process. Emphasis is placed on pipe positions, electrode selection, joint geometry, joint preparation and fit-up. Upon completion, students should be able to identify pipe positions, electrodes, proper joint geometry, joint preparation, and fit-up in accordance with applicable codes.

**WDT 218 Certification Theory** 3-0-3

This course is designed to provide the student with the knowledge needed to perform welds using the prescribed welding process. Emphasis is placed on the welding test joints in accordance with the prescribed welding code. Upon completion, students should be able to pass and industry standard welding test in accordance with various applicable welding code requirements.

**WDT 228 Gas Tungsten Arc Welding Theory 3-0-3**

This course provides student with knowledge needed to perform gas tungsten arc welds using ferrous and/or non-ferrous metals, according to applicable welding codes. Topics include safe operating practices, equipment identification and se-up, correct selection of tungsten type, polarity, shielding gas and filler metals. Upon completion, a student should be able to identify safe operating practices, equipment identification and setup, correct selection of tungsten type, polarity, shielding gas, filler metals, and various welds on ferrous and/or non-ferrous metals, using the gas tungsten arc welding process according to applicable welding codes.

**WDT 257 SMAW Carbon Pipe Lab 0-3-3**

This course is designed to provide the student with skills in welding carbon steel pipe with shielded metal arc welding techniques in various pipe welding positions. Upon completion, students should be able to perform shielded metal arc welding on carbon steel pipe with the prescribed electrodes in various positions in accordance with the applicable codes.

**WDT 258 Certification Lab 0-3-3**

**PREREQUISITE:** WDT 218 and/or as required by college. This course is designed to provide the student with the skills needed to perform welds using the prescribed welding process. Emphasis is placed on the welding test joints in accordance with the prescribed welding code. Upon completion, students should be able to pass the industry standard welding test in accordance with various welding code requirements.

**WDT 268 Gas Tungsten Arc Lab 0-3-3**

**PREREQUISITE:** WDT 228 and/or as required by college. This course provides students with skills needed to perform gas tungsten arc welds using ferrous and/or non-ferrous metals, according to applicable welding codes. Topics include safe operating practices, equipment identification and set-up, correct selection of tungsten type, polarity, shielding gas and filler metals. Upon completion, a student should be able to identify safe operating practices, equipment identification and setup, correct selection of tungsten type, polarity, shielding gas, filler metals, and various welds on ferrous and/or non-ferrous metals, using the gas tungsten arc welding process according to applicable welding codes.

## **Wood Products Technology (WOD)**

**WOD 100 Introduction to Secondary Wood Manufacturing Technology 2-3-3**

This course introduces the learner to the Secondary Wood Manufacturing Industry through lectures and demonstrations. Emphasis is placed on terminology, production aspects, quality control, supervisory roles, manufacturing equipment demonstration that include at least three each of CNC, 32mm, and Panel Processing wood related commercial mass production equipment. The learner upon conclusion will be able to demonstrate manufacturing as related to mass production.

**WOD 110 Introduction to Computers and Specialized Design Software 2-3-3**

**PREREQUISITE:** WPT 100 or permission of the instructor. This course introduces the learner to the computer, keyboard, computer operational software and specifically, design software used by the members of the Secondary Woods Manufacturing Industry employees. The software used shall be the latest edition. The learner will become familiar with terminology and core materials used and will manufacture an item from their design program that is produced on commercial mass production panel processing CNC equipment.

**WOD 115 Intermediate Specialized Design Software 2-3-3**

**PREREQUISITE:** WPT 100, 110 or permission of the instructor. This course advances the learner beyond the basics in Specialized Design Software. The learner will advance their knowledge of design techniques by preparing a design project and the necessary administrative and production paperwork necessary for a mass production shop to cost, purchase, manufacture, assemble, ship, install, and bill for the designed components.

**WOD 118 Introduction to Specialized Operation Software 2-3-3**

**PREREQUISITE:** WPT 100, 110 or permission of the instructor. This course introduces the learner to the use of recognized CNC operation software use by the Secondary Woods Manufacturing Industry. The learner will become familiar with tooling, core materials, and "G" and "M" - codes used by the wood industries CNC machines. The learner will produce a final item on a mass production commercial grade CNC router of the type used in the wood industry.

**WOD 120 Introduction to Maintenance 2-3-3**

**PREREQUISITE:** WPT 100 or permission of the instructor. This course introduces the learner to the basics of Industrial Maintenance of production secondary wood manufacturing equipment for preventative and emergency repairs. This will include electrical, electronic, pneumatic, hydraulic, lubrication, and measurement methods and tools used to perform standard and specialized tasks. The learner will also be exposed to computerized maintenance inventory systems, purchasing methods, and production cycle preventative maintenance programs used in industry for CNC equipment.

**WOD 130 Introduction to Solid Lumber Processing 2-3-3**

**PREREQUISITE:** WPT 100 or permission of the instructor. This course introduces the learner to the basics of mass production manufacturing using solid wood in the following fields: Architectural Woodwork, Business and Residential Furniture, Kitchen Cabinets, and Store Fixtures. Students will study production equipment and work with items such as a beam-saw, up cut-saw, point to point borer, etc.

**WOD 133 Introduction to Tooling and Measurement 2-3-3**

**PREREQUISITE:** WPT 100 or permission of the instructor. This course introduces the learner to the basics of machine measurements used in mass production of 32mm panel products. Industrial grade measuring equipment will be studied and used on various 32mm equipment, including in-line borer, construction borer, face frame borer, profiler, abrader, and CNC router.

**WOD 140 Introduction to Panel Processing** 2-3-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course introduces the learner to the basics of mass production manufacturing using panel products in the following fields: Architectural Woodwork, Business and Residential Furniture, Kitchen Cabinets, and Store Fixtures. Students will study production equipment and work with items such as a beam-saw, 32mm construction borer, 32 mm on-line borer, and industrial grade CNC router.

**WOD 150 Introduction to Production Finishing** 2-3-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course introduces the learner to the basic operation of production pre-finishing and finishing procedures, selection and equipment. The course includes lectures and hands-on activities involving, abrading, color selection process equipment, staining, sealing, top-coating, and forced drying using mass production equipment. Various industrial applicators for solid lumber and panel products will be used along with industrial drying equipment that includes an infrared oven.

**WOD 155 Intermediate Production Finishing** 2-3-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course advances the learner beyond finishing basics and introduces panel processing steps, equipment, and operations used in the furniture, architectural woodwork, kitchen cabinet, and store fixture manufacturers. The study and use of industrial grade conveyor finishing equipment will provide the hands-on activities similar to industrial preparation and finishing of panel products.

**WOD 160 Introduction to Wood Science** 2-3-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course introduces the learner to the basics of wood identification through the PITSCO wood identification key. Industrial grade equipment will be used to learn about the nature of wood and wood based products. Properties of wood will be discussed and studied. Drying of wood will be provided by the use of a compartmental kiln where kiln drying cycle graphs will be prepared and used in drying green lumber.

**WOD 170 Introduction to Veneer/Laminate Technology** 2-3-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course introduces the learner to the selection process of core materials. Adhesives, veneers, laminates, and films will be studied along with the various processes used in hot and cold press applications and techniques. Industrial pod film, and vacuum presses will be operated and specimens prepared.

**WOD 180 Entry Level Special Topics** 0-9-3

PREREQUISITE: WPT 100 or permission of the instructor.

This course will allow the learner to study, plan, and implement the steps in a research project designated by industry. A final written and oral report along with specimens when applicable will be presented to a group of the company's officers.