The course descriptions include those most commonly taught at Bluegrass Community and Technical College. This is not an exhaustive list. Should you require more information, or need a description for a course not listed here, please refer to the Kentucky Community and Technical College System catalog at [www.kctcs.edu](http://www.kctcs.edu). Items in brackets [ ] denote BCTC explanations.

**A&S 100 Special Introductory Course Title TBA (1-6)**
This course permits the offering at the introductory level of special courses of an interdisciplinary, topical, or experimental nature. Each proposal must be approved by the Dean of the College of Arts and Sciences. A particular title may be offered at most twice under the A&S 100 number. Students may not repeat under the same title. May be repeated to a maximum of 12 credits. Prerequisite: Will be set by instructor.

**AAS 260 African-American History to 1865 (3)**
A study of the Black experience in America through the Civil War. An examination of the African heritage, slavery, and the growth of the Black institutions. (Same as HIS 260.)

**AAS 261 African-American History 1865-Present (3)**
This course traces the Black experience from Reconstruction to the Civil Rights Movement of the 1960’s. The rise of segregation and the ghetto and aspects of race relations are examined. (Same as HIS 261.)

**AAS 264 Major Black Writers (3)**
A cross-cultural and historical approach to written and oral works by major Black authors of Africa, the Caribbean and the United States. The course includes writers such as Chinua Achebe (Africa), Wilson Harris (Caribbean), and Toni Morrison (USA). (Same as ENG 264.)

**ABR 100 Introduction to Auto Body Repair (3)**
This course introduces the student to safety, sanding, grinding, pulling, roughing and filling; the use of tools and equipment; and preparing and priming automotive panels through lectures and demonstrations.

**ABR 130 Non-Structural Analysis and Damage Repair (9)**
This course gives instruction and provides practical experience in replacing and alignment of bolts on automotive parts such as doors, hoods and fenders; as well as instruction on the repair and replacement of nonstructural weld-on automotive panels by aligning, welding, cutting and drilling through demonstrations and lectures. It will be taught by demonstration and hands-on practice. The skills required are most effectively taught and practiced on live work. The exact content will be influenced by the live work available.

**ABR 131 Non-Structural Analysis and Damage Repair Lab (4)**
This course is the lab associated with ABR 130 and provides practical experience in replacing and alignment of bolts on automotive parts such as doors, hood, and fenders; as well as instruction on the repair and replacement of non-structural weld-on automotive panels by aligning, welding, cutting and drilling through demonstrations and lectures. It will be taught by demonstration and hands-on practice. The skills required are most effectively taught and practiced on live work. The exact content will be influenced by the live work available. Prerequisites: ABR 130 or concurrent enrollment.

**ABR 150 Painting and Refinishing (9)**
This course provides instruction in the use of lacquer, acrylic enamel and base coat/clear coat refinishing products, masking procedures, preparations and paint problems. It will be taught by demonstration and lecture. The auto and/or autos being used for live work will determine the exact course content.
ABR 151 Painting and Refinishing Lab (4)
This course is the lab for ABR 150 and provides instruction in the use of lacquer, acrylic enamel, and base coat/clear coat refinishing products, masking procedures, preparations and paint problems. It will be taught by demonstration and lecture. The auto and/or autos being used for live work will determine exact content. Prerequisites: ABR 150 or concurrent enrollment.

ABR 198 Practicum (1-8)
The practicum provides supervised on-the-job work experience related to the students’ education objectives. Students participating in the practicum do not receive compensation. May be taken for 1-8 credits. Prerequisite: Permission of instructor.

ABR 199 Cooperative Education (1)
Co-op provides supervised on-the-job work experience related to the students’ educational objectives. Students participating in the Co-op Education program receive compensation for their work. May be taken for 1-8 credits. Prerequisite: Permission of the instructor.

ABR 200 Plastics and Adhesives (3)
This course provides instruction on how to repair plastic, fiberglass, SMC and flexible automobile parts. It will be taught by lecture and demonstration. Prerequisite: Permission of instructor.

ABR 230 Structural Analysis and Damage Repair (9)
This course presents instruction on the analysis, repair and replacement of structural panels on unibody automobiles and body and frame alignment on unibody and frame cars. It will be taught by demonstration and lecture.

ABR 231 Structural Analysis and Damage Repair Lab (4)
This course is the lab component and presents instruction on the analysis, repair and replacement of structural panels on unibody automobiles and body and frame alignment on unibody and frame cars. It will be taught through demonstration and hands-on experience. Prerequisites: ABR 230 or concurrent enrollment.

ABR 250 Mechanical and Electrical Components (9)
This course provides instruction in the diagnosis, repair and/or replacement of suspension, steering, electrical, brake, drive train, fuel, exhaust, and restraint systems. The theories and concepts of heating and air conditioning systems will also be discussed and demonstrated. It will be taught by demonstration and lecture and involve live work on automobiles. Prerequisite: Consent of instructor.

ABR 251 Mechanical and Electrical Components Lab (2)
This course is the lab for ABR 250 and provides instruction in the diagnosis, repair and replacement of suspension, steering, electrical, brake, drive train, fuel, exhaust and restraint systems. The theories and concepts of heating and air conditioning systems will also be discussed and demonstrated. It will be taught by demonstration and lecture and involve live work on automobiles. Prerequisites: ABR 250 or concurrent enrollment.

ABR 291 Special Projects I (3)
This course will be designed for students to satisfactorily complete collision repair tasks or to enhance their skills in the occupational area. Prerequisite: Permission of the instructor.

ABR 293 Special Projects II (2)
This course will be designed for students to satisfactorily complete collision repair tasks to enhance their skills in the occupational area. Prerequisite: Permission of the instructor.

ABR 295 Special Projects III (3)
This course will be designed for students to satisfactorily complete collision tasks to enhance their skills in the occupational area. Prerequisite: Permission of the instructor.

ABR 298 Practicum (2)
The practicum provides supervised on-the-job work experience related to the students’ education objectives.
Students participating in the practicum do not receive compensation. Prerequisite: Permission of the instructor.

**ABR 299 Cooperative Education (2)**
Co-op provides supervised on-the-job work experience related to the students’ educational objectives. Students participating in the Co-op Education program receive compensation for their work. Prerequisite: Permission of the instructor.

**ACC 201 Financial Accounting I (3)**
Presents generally accepted accounting principles used for the measurement and reporting of financial information in the financial statements. Prerequisite: Sophomore standing or consent of instructor.

**ACC 202 Managerial Uses of Accounting Information (3)**
An introduction to the use of accounting data within an organization to analyze and solve problems and to make planning and control decisions. This course is designed for non-accounting majors. Prerequisites: ACC 201 or ACT 101 and ACT 102.

**ACC 211 Financial Accounting Lab (1)**
A laboratory-based approach to introductory financial accounting applications, with the primary focus on the accounting cycle. The primary objective is to promote an understanding of how accounting information is identified, recorded, and processed for financial reporting. Prerequisite: ACC 201. Enrollment priority will be given to accounting and finance majors.

**ACH 100 Construction Documents I (3)**
This is the first course of a four-semester studio sequence. Proper methods and fundamentals of architectural construction documents and residential construction will be introduced. Drafting conventions utilizing basic hand drafting tools and computer-aided drawing techniques will be studied.

**ACH 110 Survey of the Architectural Profession (1)**
In this course, the student will gain an understanding of the language of architecture and develop an appreciation for building design strategies through direct analysis. In addition, various career opportunities in architecture and related professions will be explored.

**ACH 120 Theory and History of Architecture I (3)**
The development of architecture as it is related to world culture with an emphasis on design, structure, materials, eco-social, and political factors are considered.

**ACH 150 Construction Documents II (3)**
This is the second course of a four-semester studio sequence. Students develop architectural construction documents for multi-level framed construction. Students will further develop an understanding of programming, schematics, design development, and construction document production using current computer-aided technology. Emphasis will be placed on building codes and related discipline coordination. Prerequisites: ACH 100 or consent of instructor.

**ACH 160 Building Materials and Construction I (3)**
The essentials of the theory of selected building materials (Construction Specifications Institute, Divisions 2-7) and their assembly in appropriate systems are presented with particular attention to component selection and behavior under various loads, climatic conditions and fire.

**ACH 161 Building Materials and Construction II (3)**
The essentials of the theory of selected building materials (Construction Specifications Institute, Divisions 7-16) and their assembly in appropriate systems are presented with particular attention to component selection and behavior under various loads, climatic conditions and fire.
ACH 170 Theory and History of Architecture II (3)
A survey of the architectural periods from the neo-classic to the present is presented. This course is a continuation of ACH 120.

ACH 175 Introduction to Systems (3)
An overview of the various systems found in buildings and the influences that shape architectural design and construction is presented.

ACH 180 Selected Topics in Architectural Technology (Topic) (1-3)
The subject matter of this course may vary from semester to semester as new technology is developed and new issues evolve and/or to address local architectural issues. This course may be repeated with different topics to a maximum of six credit hours. Prerequisites: Consent of instructor.

ACH 194 Visual Composition (3)
In this course, the student will study the aesthetic principles found in both two-dimensional and three-dimensional compositions. These principles will be applied in exercises involving drawing, model construction and creative writing.

ACH 195 Computer-Aided Drafting I (3)
Students learn how computer hardware and software are used in preparing architectural documents.

ACH 200 Construction Documents III (3)
This is the third course of a four-semester studio sequence. Students study the methods by which commercial buildings are designed and constructed. Basic skills are developed relating to the implementation of determinants in this process such as program analysis, applicable codes, construction methods and materials as well as computer applications. Through the completion of a series of structured projects including the preparation of a set of architectural construction documents for a medium-sized building, students apply the knowledge necessary to achieve these goals. Prerequisites: ACH 150 and ACH 195, or consent of instructor.

ACH 225 Structures (3)
Students study structural materials and systems including the design of simple structural components. Prerequisites: ACH 175 and MAH 115, or consent of instructor.

ACH 250 Construction Documents IV (3)
This is the fourth course of a four-semester studio sequence. Students prepare a set of advanced construction documents using current computer-aided drafting techniques. Emphasis will be placed on design principles and site development for a commercial construction project. Prerequisites: ACH 200 or consent of instructor.

ACH 260 Office Practice (3)
This course is intended to serve as a capstone course in the Architectural Technology program. Emphasis is placed on preparing students for the workplace by focusing on the professional, legal, and business aspects of the architectural and construction industries. Case studies are reviewed and projects are prepared by students with the goal of introducing them to a broader set of circumstances that affect how decisions are made in the practice of architecture. Prerequisites: ACH 110 and ACH 200 or equivalent.

ACH 275 Mechanical and Electrical Systems (3)
Students engage in a qualitative and quantitative study of environmental control systems used in buildings. Prerequisites: ACH 175 and MAH 115, or consent of instructor.

ACH 290 Building Codes I (3)
Students will analyze the content and format of current building codes. The necessity for building codes, problems in interpretation and application as well as legal aspects will be discussed. The main objective is to familiarize
students with the basic provisions and procedures associated with building code administration. Prerequisites: ACH 150 and ACH 160, or consent of instructor.

ACH 291 Construction Management (3)
Students examine the principles and current practices of construction management with emphasis on project organization, scheduling and cost control. Prerequisites: ACH 150, ACH 160 and ACH 161, or consent of instructor.

ACH 292 Building Codes II (3)
This course will be continuation of ACH 290, Building Codes I, with a more in-depth study of current building codes. Prerequisites: ACH 290 or consent of instructor.

ACH 293 Presentation Techniques (3)
Students will explore a variety of presentation and rendering techniques used in the architectural profession. Design skills and the understanding of spatial relationships will be further developed. Prerequisites: ACH 100 or consent of instructor.

ACH 294 Specification Writing (3)
This course provides an in-depth study of the importance of specifications in the design and construction process. Students will engage in research, evaluate the quality of building materials, study the methods of writing specifications, and gain exposure to industry standard software in preparing a variety of specifications. Prerequisites: ACH 150, ACH 160, ACH 161, or consent of instructor.

ACH 295 Computer-Aided Drafting II (3)
Students learn how to modify selected computer aided drafting software to enhance construction document production. Integration of other software will also be discussed. Prerequisites: ACH 195 or consent of instructor.

ACH 297 Estimating Techniques (3)
Students investigate the factors affecting the cost of construction, labor productivity, materials, overhead and profit, including area and volume computations. Current methods of cost estimating will be applied. Prerequisite: ACH 150 and MAH 115; or consent of instructor.

ACH 298 Computer 3D Modeling (3)
Students learn how computer hardware and software are used in preparing 3D architectural drawings and client-oriented presentations. Prerequisites: ACH 150 and ACH 195 or consent of instructor.

ACR 100 Refrigeration Fundamentals (3)
Introduces the fundamentals of refrigeration, refrigeration terms and the basic refrigeration cycle. Proper use of tools, test equipment, and materials is stressed. Environmental issues including refrigerant handling are discussed. Refrigerant piping and methods used to join them are taught. General and specific safety is emphasized. Co-requisite: ACR 101.

ACR 101 Refrigeration Fundamentals Lab (2)
Develops proper hands-on techniques in the servicing and troubleshooting of basic systems. Proper use and care of tools, equipment, and materials is stressed. Enhances the skills and working knowledge of tubing, fitting, brazing and soldering. Safety will be emphasized. Co-requisite: ACR 100.

ACR 102 HVAC Electricity (3)
This course introduces students to the basic physics of electricity. Students apply Ohm’s law; measure resistance, voltage, ohms, watts and amps; construct various types of electrical circuits; select wire and fuse sizes; and learn to troubleshoot an electric motor and motor controls.

ACR 103 HVAC Electricity Lab (1)
Introduces students to the basic physics of electricity. Students apply Ohm’s law; measure resistance, voltage, ohms,
watts and amps; construct various types of electrical circuits; select wire and fuse sizes; and learn to troubleshoot an electric motor and motor controls. Co-requisite: ACR 102.

**ACR 112 Sheet Metal Fabrication (3)**
The student will learn to make patterns and lay out and construct common sheet metal duct fittings. Co-requisite: ACR 113.

**ACR 113 Sheet Metal Fabrication Lab (2)**
The student will lay out, cut, construct and install common sheet metal duct fittings. Co-requisite: ACR 112.

**ACR 130 Electrical Components (3)**
Defines the electrical components of an air conditioning system. Different types of line voltages, wiring diagrams and solid state devices are included. Safety is emphasized. Prerequisites: ACR 102. Co-requisite: ACR 131.

**ACR 131 Electrical Components Lab (2)**
In the laboratory, students practice using the different types of line voltages, reading wiring diagrams and using solid state devices. Safety is emphasized. Prerequisite: ACR 102. Co-requisite: ACR 130.

**ACR 170 Heat Load/Duct Design (3)**
Introduces the fundamentals needed to calculate heat gain and heat loss, thereby determining air conditioner/furnace size. This information will be used to calculate the correct duct size. Procedures to lay out a duct system as outlined in ACCA MANUAL D are presented.

**ACR 198 Practicum (2)**
Practicum provides supervised on-the-job work experience related to the student’s educational objectives. Students participating in Practicum do not receive compensation. Prerequisite: Permission of the instructor.

**ACR 199 Cooperative Education Program (2)**
Co-op provides supervised on-the-job work experience related to the student’s educational objectives. Students participating in the Cooperative Education program receive compensation for their work. Prerequisite: Permission of the instructor.

**ACR 200 — Commercial Refrigeration (3)**
Develops techniques for servicing and troubleshooting mechanical and electro-mechanical refrigeration components. Emphasizes electrical and refrigeration safety. Covers proper tool use and environmentally sound refrigerant handling.
Prerequisite: (ACR 100 and ACR 101) with a grade of C or greater.
Co-requisite: ACR 201. Lecture: 3 credits (45 contact hours).
Component: Lecture

**ACR 201 — Commercial Refrigeration Lab (2)**
Provides techniques in servicing and troubleshooting mechanical and electro-mechanical refrigeration components. Emphasizes electrical and refrigeration safety. Covers proper tool use and environmentally sound refrigerant handling.
Prerequisite: (ACR 100 and ACR 101) with a grade of C or greater.
Co-requisite: ACR 200. Laboratory: 2 credits (60 contact hours).
Component: Laboratory

**ACR 210 — Ice Machines (3)**
Introduces operation, checking, adjusting and troubleshooting commercial ice makers. Covers adjusting, checking, cleaning and troubleshooting commercial ice machines.
Prerequisite: (ACR 100 and ACR 102) with a grade of C or greater.
Lecture: 3 credits (45 contact hours).

ACR 250 — Cooling and Dehumidification (3)
Explains working characteristics of air conditioning units with air and water cooled condensers. Covers line low voltage and pneumatic controls.
Prerequisite: (ACR 100 & ACR 101) with a grade of C or greater.
Co-requisite: ACR 251.
Lecture: 3 credits (45 contact hours).

ACR 251 — Cooling and Dehumidification Lab (2)
Prepares the student for installing, servicing, and troubleshooting air conditioning systems with water and air cooled condensers and line and low voltage.
Prerequisite: (ACR 100 & ACR 101) with a grade of C or greater.
Co-requisite: ACR 250.
Laboratory: 2 credits (60 contact hours).

ACR 260 — Heating and Humidification (3)
Explains heating systems from simple fossil fuel furnaces through more complex systems. Concentrates on line and control voltage circuitry pertaining to these systems.
Prerequisite: (ACR 102 and ACR 103) with a grade of C or greater.
Co-requisite: ACR 261.
Lecture: 3 credits (45 contact hours).

ACR 261 — Heating and Humidification Lab (3)
Provides lab time for application of troubleshooting, checking, adjusting, and installing heating units currently in use.
Prerequisite: (ACR 102 and ACR 103) with a grade of C or greater.
Co-requisite: ACR 260.
Laboratory: 3 credits (90 contact hours).

ACR 270 — Heat Pump Application (3)
Explains reverse cycle heating systems, defrost cycles, reversing valves, and auxiliary heating. Concentrates on line and control voltage circuitry pertaining to these units.
Prerequisite: [(ACR 100 and ACR 102) with a grade of C or greater] or Permission of Instructor.
Co-requisite: ACR 271.
Lecture: 3 credits (45 contact hours).

ACR 271 — Heat Pump Application Lab (2)
Provides for application of troubleshooting, checking, adjusting, and installing reverse cycle units.
Prerequisite: [(ACR 100 and ACR 102) with a grade of C or greater] or Permission of Instructor.
Co-requisite: ACR 270.
Laboratory: 2 credits (60 contact hours).

ACR 290 — Journeyman Preparation (3)
Includes lectures, discussions, and presentations pertaining to the proper application of HVAC codes. Prepares the student to pass the Kentucky Journeyman HVAC licensing exam. (This class should be taken at the end of the program.)
Lecture: 3 credits (45 contact hours).

ACR 291 Instructor Consent Required Special Problems I

A course designed for the student who has demonstrated specific needs.

Prerequisite: Permission of instructor.
Component: Laboratory

ACR 293 — Special Problems II (2)
A course designed for the student who has demonstrated specific special needs.
Prerequisite: Permission of Instructor

Component: Laboratory

ACR 295 — Special Problems III (3)
A course designed for the student who has demonstrated specific special needs.
Prerequisite: Permission of Instructor

Component: Laboratory

ACR 298 — Practicum (2)
Practicum provides supervised on-the-job work experience related to the student's education objectives. Students participating in Practicum do not receive compensation.
Prerequisite: Permission of the Instructor.
Component: Practicum

ACR 299 — Cooperative Education Program (2)
Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.
Prerequisite: Permission of the Instructor.
Component: Co-Op

ACT 101 Fundamentals of Accounting I (3)
Students are introduced to accounting terminology and general theoretical principles. The major focus of the course is on the accounting cycle and the communication of financial information to decision-makers.

ACT 102 Fundamentals of Accounting II (3)
Basic financial accounting concepts and methods are expanded to include accounting for partnerships and corporations.

ACT 196 Payroll Accounting (3)
The design and implementation of modern payroll systems will be introduced in this course.

ACT 279 Computerized Accounting Systems (3)
Accounting concepts and principles are applied using computerized accounting systems. ACC 201 or ACT 101 and ACT 102 or concurrent enrollment in ACT 102. Computer literacy 3 credit hours

ADFT 130 Introduction to Architecture (4)
Provides a practical approach to architectural drafting. An introduction to board and computer aided drafting as it relates to residential and commercial architecture, specifications, and structural systems including wood, masonry, concrete, and steel. Prerequisites: DFT 122 with a grade of “C” or better or approval of program coordinator.

ADFT 230 Construction Techniques (4)
Covers the elements for constructing standard residential and commercial structures. Essentials of standard construction details, which illustrate the various construction methods involved in wood frame, solid masonry,
masonry veneer, concrete, and steel construction, and develop a portfolio for those techniques. Prerequisites: ADFT 130 with a grade of “C” or better or approval of program coordinator.

**ADFT 240 Architectural Design (4)**
Combines the elements and fundamentals of architectural design with the theory and application of presentation techniques. Deals with site selection, use of materials in design, spatial relationships, and aesthetics. Traditional and contemporary design, designers, processes, and historical milestones are explored. Board and computer techniques are used in illustrating interiors and exteriors of student designs. Prerequisites: ADFT 130 with a grade of “C” or better or approval of program coordinator.

**ADFT 252 Commercial Detailing (4)**
Introduces the student to the theory applied to commercial drafting. Explores building codes, building structure, materials, and structural drawing and detailing. Emphasizes calculations to determine appropriate steel members. Prerequisites: DFT 230 with a grade of “C” or better or approval of program coordinator.

**ADFT 262 Working Drawings (4)**
Uses combination of the fundamentals of building construction with the technology to prepare a working drawing portfolio. Pre-requisites: ADFT 230 with a grade of “C” or better or approval of program coordinator.

**ADX 120 Basic Automotive Electricity (3)**
Introduces principles, theories, and concepts of the automotive electrical system that include the unique diagramming, coding and locating of wiring, and component devices.

**ADX 121 Basic Automotive Electricity Lab (2)**
Provides practical experiences and applications relating to concepts, principles, and theories covered in Basic Automotive Electricity, ADX 120. May provide a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**ADX 150 Engine Repair (3)**
Provides a series of lectures and demonstrations on the fundamentals of engine repair, troubleshooting, and engine operation and maintenance.

**ADX 151 Engine Repair Lab (2)**
Provides practical experiences and applications relating to engine repair, inspection, trouble shooting and maintenance. May provide a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**ADX 170 Climate Control (3)**
Introduces the theory and operation of heating and air conditioning systems, air conditioning terminology, and servicing and troubleshooting mechanical and electrical circuits of heating and air conditioning systems.

**ADX 171 Climate Control Lab (1)**
Provides opportunities to trouble shoot, repair and perform maintenance on heating and air conditioning systems. Provides experiences in safety precautions, special tool uses, component operation and servicing and troubleshooting the complete system. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**ADX 260 Electrical Systems (3)**
Focuses on the theory and principles relating to automotive electrical/electronic components.

**ADX 261 Electrical Systems Lab (2)**
Provides practical applications and experiences related to the theory and principles of automotive electrical/electronic components. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AFS 111 Aerospace Studies I (1)**
A course designed to provide the student with a basic understanding of the nature and principles of war, national power, and the Department of Defense role in the organization of national security. The student also develops leadership abilities by participating in a military organization, the cadet corps, which offers a wide variety of situations demanding effective leadership. Co-requisite: AFS 112

**AFS 112 Leadership Laboratory I (1)**
A course designed for development of basic skills required to be a manager, including communications, human relations, and administration of equal opportunity. Credit will not be granted toward the hours requirements for the degree. Pass/fail only. Co-requisite: AFS 111.

**AFS 113 Aerospace Studies I (1)**
A course designed to provide the student with a basic understanding of the contribution of aerospace power to the total U.S. strategic offensive and defensive military posture. The student also develops leadership abilities by participating in a military organization, the cadet corps, which offers a wide variety of situations demanding effective leadership. Prerequisite: AFS 111

**AFS 114 Leadership Laboratory I (1)**
A continuation of AFS 113. A course designed to develop managerial skills including superior/subordinate relationships, communications, customs and courtesies, basic drill movements and career progression requirements. Credit will not be granted toward the hours requirements for the degree. Pass/fail only. Co-requisite: AFS 113.

**AFS 211 Aerospace Studies II (1)**
Introduces the study of air power from a historical perspective; focuses on the development of air power into a primary element of national security. Leadership experience is continued through active participation in the cadet corps. Prerequisites: AFS 111, 113 or PAS approval.

**AFS 212 Leadership Laboratory II (1)**
A course designed for development of advanced skills required to be a manager/leader, including leadership studies, public speaking, group dynamics, motivation and preparation for field training. Credit will not be granted toward the hours requirements for the degree. Pass/fail only. Co-requisite: AFS 211.

**AFS 213 Aerospace Studies II (1)**
Provides a foundation for understanding how air power has been employed in military and non-military operations to support national objectives. Examines the changing mission of the defense establishment, with particular emphasis on the United States Air Force. Leadership experience is continued through participation in the cadet corps. Prerequisite: AFS 111, 113 or PAS approval.

**AFS 214 Leadership Laboratory II (1)**
A continuation of AFS 213. A course designed to develop supervisory management skills to include communications, techniques of critique, social actions, personnel evaluation procedures, problem solving, role playing and field training preparation. Credit will not be granted toward the hours requirements for the degree. Pass/fail only. Co-requisite: AFS 213.

**A-H 105 Ancient Through Medieval Art (3)**
Survey of the development of art and architecture with primary emphasis on cultures of Egypt, Western Asia, Greece, Rome, and medieval Europe.

**A-H 106 Renaissance Through Modern Art (3)**
Historical development of Western art and architecture from the 14th century through the present.
AHS 115 Medical Terminology (3)
A study of anatomical, physiological and pathological terminology with emphasis on work structures and definition of root words, suffixes, and prefixes from Greek and Latin. Additional emphasis is placed on spelling and pronunciation. Primarily designed for individuals preparing for a career in health care. No previous knowledge of Greek or Latin is required.

AHS 140 Introduction to Public and Community Health (3)
Introduces students to the management of public health emergencies. Topics include human epidemics and pandemics, agricultural and plant diseases, and emergency medicine.

AMS 101 Introduction to the Army (2)
This introductory level course is designed to give students an appreciation for the role the Army currently plays in our society. The course covers the history of the Army and the roles and relationships of the Army within our society. The course also covers some of the basic skills necessary for today’s leaders to include oral presentation, time management, map reading, basic rifle marksmanship and squad tactics.

AMS 102 Introduction to Leadership (2)
This course is designed to acquaint the student with the fundamental skills necessary to be a leader, both in military and civilian context. Course also covers basic military map reading skills.

AMS 211 Advanced Leadership I (2)
This course focuses on both theoretical and practical aspects of leadership. Students will examine topics such as written and oral communication, effective listening, assertiveness, personality, adult development, motivation, and organizational culture and change.

AMS 212 Advanced Leadership II (2)
This course focuses principally on officership, providing an extensive examination of the unique purpose, roles, and obligations of commissioned officers. It includes a detailed investigation of the origin or our institutional values and their practical application in decision making and leadership.

ANA 209 Principles of Human Anatomy (3)
The structure of the human body will be examined at various levels: cellular, tissues and organ systems. The gross anatomical arrangement of the body will be studied in a system-by-system format relating structure to function and the fundamentals of human embryology/malformation with adult anatomy. The central nervous system will be emphasized. Prerequisite: Introductory biology or zoology.

ANT 101 Introduction to Anthropology (3)
This course introduces the student to the study of human cultures, past and present. It offers a comprehensive introduction to anthropology, emphasizing the concepts and methods of the major sub-fields, i.e., cultural, biological, archaeology, and linguistics.

ANT 130 Introduction to Comparative Religion (3)
Comparative study of major world and selected regional religions with emphasis on analysis of belief, ritual, artistic expression and social organization. Eastern and Western religions are considered. (Same as RS 130.)

ANT 160 Cultural Diversity in the Modern World (3)
Directed at non-majors, this course is intended to introduce the student to the diversity of human cultural experience in the contemporary world. Goals of the course include gaining an appreciation for the common humanity and uniqueness of all cultures; to gain a sensitivity toward stereotypes and ethnocentrism, and to understand the distinctions between “race,” ethnicity and racism. The course features extended descriptions of the cultural dynamics of the culture(s) with which the instructor has worked.

ANT 220 Introduction to Cultural Anthropology (3)
The study of the lifeways and beliefs of different peoples. The objectives of the course are to foster an appreciation
for the variety of cultural traditions found throughout the world, and to introduce students to anthropological concepts and methods of inquiry.

**ANT 221 Native People of North America (3)**
A survey of the aboriginal Indian cultures of North America, and of the impact of four centuries of British, French, Spanish, and Russian contact on the Indian communities. The course will include consideration of the status of Indians in present-day North America.

**ANT 240 Introduction to Archaeology (3)**
Introduces the theories, techniques, and strategies used by archaeologists to recover and interpret information about past cultures.

**ANT 241 Origins of Old World Civilization (3)**
A survey of cultural developments in the Old World from the earliest times to the beginning stages of civilization.

**ANT 242 Origins of New World Civilization (3)**
Survey of the origin and growth of ancient peoples of the Americas as revealed by archaeological data.

**ART 100 Introduction to Art (3)**
This course is open to all students interested in an understanding and appreciation of the visual arts. The formal and expressive qualities of major art forms are examined through lectures and presentations.

**ART 110 Drawing I (3)**
Introduction to basic drawing skills and concepts. Projects in line, value, space and composition are among the topics that will be explored in a variety of media.

**ART 210 Drawing II (3)**
Advanced studio investigation of drawing techniques and concepts. Projects in line, value, composition and space will be investigated through individual development of style and expression, with extensive use of figure models.

**ASL I American Sign Language I (3)**
A functional-notational approach to learning beginning competency in American Sign Language (ASL). The syntax, grammar, and non-manual markers (behaviors) of ASL and cultural information will be incorporated. After an initial orientation period, no verbal communication will be used in the classroom.

**ASL II American Sign Language II (3)**
A functional-notational approach designed to follow SED 101 that will enhance students’ knowledge of American Sign Language and expand their understanding and appreciation of the people who use it. Prerequisite: SED 101.

**ASL III American Sign Language III (3)**
Emphasis is placed on practical application of ASL signing skills, development of cross-cultural communication abilities, and vocabulary expansion. Linguistic information is reviewed and additional linguistic materials are introduced. Prerequisite: SED 203.

**ASL IV American Sign Language IV (3)**
Continued expansion of sign vocabulary, sharpening of conversational skills including finger spelling and numbers, semantics, morphology, syntax and other ASL features applied to conversational settings. Prerequisite: SED 203.

**AST 191 The Solar System (3)**
A course emphasizing the nature, origin and evolution of planets, satellites and other objects in the Solar System. Topics also include historical astronomy, the naked eye phenomena of the sky and modern solar system discoveries made by spacecraft. This course may be taken independently of AST 192.

**AST 192 Stars, Galaxies and the Universe (3)**
A course covering the universe outside the Solar System. A principle theme is the origin and evolution of stars, galaxies and the universe at large. Topics also include black holes, quasars and the big bang model of the universe.
This course may be taken independently of AST 191.

ASY 195 Introductory Astronomy Lab (1)
Students will perform exercises in both planetary and stellar astronomy, including Kepler’s Laws of Planetary Motion and Newton’s Laws of Motion. The functions and limitations of different types of telescopes and mounts will be examined. Students will observe the sun, moon, planets, binaries, galaxies, and nebulae. Prerequisites or concurrent: AST 191, MT 120 or two years of high school algebra.

AUT 110 Brake Systems (3)
Involves the operational theory and application of hydraulic and anti-lock brake systems; discusses disc and drum brakes.

AUT 111 Brake Systems Lab (2)
Develops skills in the diagnosis and repair of hydraulic and anti-lock brake systems, covering both disc and drum type braking systems. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

AUT 130 Manual Transmissions (3)
Involves an in-depth study of principles of operation, construction, and service of manual transmissions and related drive train components (differentials, clutches, u-joints, rear wheel drive and 4-wheel drive).

AUT 131 Manual Transmissions Lab (2)
Develops skills in the diagnosis and repair of manual transmissions and related drive train components (differentials, clutches, u-joints, rear wheel drive, and 4-wheel drive). May provide a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

AUT 140 Basic Fuel and Ignition Systems (3)
Includes the theory, component identification, application, operation, service and repair of the basic automotive ignition, fuel, and emission systems, including related components.

AUT 141 Basic Fuel and Ignition Systems Lab (2)
Provides skills necessary to diagnose and repair the automotive basic ignition, fuel, and emission systems and related components. May provide a unique work study experience alternating between periods of work on-site and work in a classroom laboratory setting.

AUT 142 Emission Systems (3)
Presents the theory, component identification, application, operation, service and repair of advanced automotive ignition, fuel, and emission systems, including related components.

AUT 143 Emission Systems Lab (2)
Introduces skills necessary to diagnose, service and repair automotive advanced ignition, fuel, and emission systems, including related components. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

AUT 160 Suspension and Steering (3)
Covers automotive suspension system, including diagnosing of suspension problems, identifying components, recognizing tire wear problems, wheel balancing, and using alignment equipment.

AUT 161 Suspension and Steering Lab (2)
Introduces skills necessary in the diagnosis and repair of automotive suspension systems, wheel alignment, and wheel balancing. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

AUT 180 Automatic Transmissions/Transaxle (3)
Covers operating principles of rear and front wheel drive automatic transmissions and transaxles, and the testing and diagnostic process.

**AUT 181 Automatic Transmission/Transaxle Lab (2)**
Develops diagnostic and repair skills related to the operation of rear and front wheel automatic transmissions and transaxles. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AUT 198 Practicum (1)**
The Practicum provides supervised on-the-job work experience related to the student's educational objectives. Students who participate in the practicum do not receive compensation.

**AUT 199 Cooperative Education Program (1)**
Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students who participate in the Cooperative Education program receive compensation for their work.

**AUT 240 Computer Control Systems and Diagnosis (3)**
Covers the comprehensive diagnostics of on-board computer control systems, including distributorless ignition systems. Presents the problem-solving process including flowchart reading.

**AUT 241 Computer Control Systems and Diagnosis Lab (2)**
Introduces the skills necessary to diagnose and repair drivability problems associated with on-board computer control systems. May provide a work study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AUT 290 Special Problems I (1)**
A course designed for the student who has demonstrated specific needs. The student may be provided a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AUT 291 Special Problems II (2)**
A course designed for the student who has demonstrated specific needs. The student may be provided a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AUT 292 Special Problems III (3)**
A course designed for the student who has demonstrated specific needs. The student may be provided a work-study experience alternating between periods of work off campus and work in a classroom laboratory setting.

**AUT 298 PRACTICUM (1)**
The practicum provides supervised on-the-job work experience related to the students educational objectives. Students who participate in the practicum do not receive compensation.

**AUT 299 Cooperative Education Program (1)**
Co-op provides supervised on-the-job work experience related to the students educational objectives. Students who participate in the Cooperative Education program receive compensation for their work.

**BEX 100 Basic Electricity for Non-Majors (3)**
This course introduces non-majors to the basic physics of electricity. Students apply Ohm's law; measure resistance, voltage, ohms, watts and amps; construct various types of electrical circuits; select wire and fuse sizes; and learn to troubleshoot an electric motor and coil. Co-requisite: BEX 101.

**BEX 101 Basic Electricity Lab for Non-Majors (2)**
This is a hands-on class designed to allow the student to use the concepts, principles, and theories covered in BEX 100, Basic application. Electricity for non-majors. Co-requisite: BEX 100.
BIO 112 Introduction to Biology (3)
Basic study of structure, function and interactions of living organisms including cell theory, genetics, energetics, evolution and ecology.

BIO 113 Introduction to Biology Lab (1)
Basic laboratory studies of structure, function and interactions of living organisms including cell theory, genetics, energetics, evolution and ecology. Prerequisite/co-requisite: BIO 112.

BIO 118 Microbes and Society
An introduction to the science of microbiology addressing the role of microorganisms in nature and in human welfare. Contemporary topics will include infectious diseases, genetic engineering, the environment and biological warfare.

BIO 120 Human Ecology (3)
Interrelationships among humans, other organisms and the environment including principles of energy and matter, resource use, biogeochemical cycling, trophic structures, sustainability and environmental impacts by humans.

BIO 130 Aspects of Human Biology (3)
Aspects of human biology will be introduced from the molecular level to the integrated whole. Attention will be given to biological bases of various health and wellness issues.

BIO 135 Basic Anatomy and Physiology with Laboratory (4)
The fundamental structure of the human body and the physiological mechanisms involved in normal functioning are presented through lecture and student participation in laboratory activities.

BIO 137 Human Anatomy and Physiology I (4)
The interrelationship of structure and function of each body system will be presented in two semesters. The first semester will include basic chemistry, cell structure, cell physiology, metabolism, tissues, and integumentary, skeletal, muscular, and nervous systems. Prerequisites: Reading, English and Mathematics assessment exam scores above the KCTCS developmental placement level or successful completion of the prescribed developmental course(s) or consent of instructor.

BIO 139 Human Anatomy and Physiology II (4)
The second semester continues the study of the inter-relationships of organ systems, including the endocrine, reproductive, cardiovascular, lymphatic, digestive, respiratory, and urinary systems. Prerequisite: BIO 137.

BIO 150 Principles of Biology I (3)
Presents knowledge of biological principles at the cellular and molecular levels, similarities and differences in structure and function of simple and complex cells and theories on the origin and evolution of biological systems. Part one of a two semester sequence (BIO 150 and BIO 152). Prerequisites: CHE 105 or concurrent enrollment, or consent of instructor.

BIO 151 Principles of Biology Laboratory I (2)
Includes studies of cellular and molecular biology. Pre-requisite: BIO 150 or concurrent enrollment.

BIO 152 Principles of Biology II (3)
Presents knowledge of organismal population and community biology. Part two of a two semester sequence (BIO 150 and BIO 152). Prerequisites: BIO 150 or consent of instructor.

BIO 153 Principles of Biology Laboratory II (2)
Includes organismal, population and community biology. Prerequisite: BIO 152 or concurrent.

BIO 209 Introductory Microbiology Laboratory (2)
Laboratory exercises in general microbiology. Prerequisites: One unit of chemistry or consent of instructor; BIO 226 should be taken concurrently.
BIO 226 Principles of Microbiology (3)
Introduction to fundamental microbiological principles and techniques emphasizing structural, functional, ecological and evolutionary relationships among microorganisms. Prerequisites: BIO 112 or consent of instructor.

BRX 110 Basic Blueprint Reading for Machinist (2)
Basic applied math, lines, multi-view drawings, symbols, various schematics and diagrams, dimensioning techniques, sectional views, auxiliary views, threads and fasteners, and sketching typical to all shop drawings are presented. Safety will be emphasized as an integral part of the course.

BRX 112 Blueprint Reading for Machinist (4)
Provides the student with a beginning and advanced series of lectures, demonstrations, and practice exercise in the study of prints. Safety will be emphasized as an integral part of this course.

BRX 120 Basic Blueprint Reading (3)
This course presents basic applied math, lines, multiview drawings, symbols, various schematics and diagrams, dimensioning techniques, sectional views, auxiliary views, threads and fasteners, and sketching typical to all shop drawings. Safety will be emphasized as an integral part of the course.

Sub-Categories of BRX 120

BRX 1201 Print Reading Fundamentals (1)
This module of BRX120 presents basic applied math, lettering, lines, and multiview drawings.

BRX 1202 Drawing Views and Setup (1)
This module of BRX120 presents sketching, auxiliary and sectional views, title blocks, material lists and the drawing change system.

BRX 1203 Dimensioning and Tolerances (1)
This module of BRX120 presents print dimensioning and tolerances and thread specifications.

BRX 210 Mechanical Blueprint Reading (2)
Provides the student with an advanced series of lectures, demonstrations, and practice exercises in the study of prints involving math (both decimal and metric), combination of lines, multi-view drawings, assembly drawings, fasteners, machining and construction processes, datum coordinates, numerical control prints, sheet metal prints, welding, casting and forging prints. Safety will be emphasized. Prerequisites: BRX 110 with a grade of "C" or greater or consent of instructor.

BRX 220 Blueprint Reading for Construction (3)
Provides a series of lectures, demonstrations, and practice exercises in the study of symbols, views, sections, details, and material lists found on architectural working drawings, building materials and specifications lists, and construction dimensioning systems and charts/schedules.

BRX 230 Mechanical Blueprint Reading (3)
This course provides the student with an advanced series of lectures, demonstrations, and practice exercises in the study of prints involving math (both decimal and metric), combination of lines, multiview drawings, assembly drawings, fasteners, machining and construction processes, datum coordinates, numerical control prints, sheet metal prints, welding, casting and forging prints. Safety will be emphasized as an integral part of the course.

BSL 214 Medical Microbiology (4)
The characteristics of microorganisms and their relation to health and disease are studied. Prerequisite: BIO 137 and BIO 139, or equivalent. [Formerly BSL 212]
BSL 295 Independent Investigation in Biology (1-3)
The investigation of a specific topic or problem in the field of the biological sciences appropriate for students at the sophomore level. May be repeated for a maximum of six credits. Laboratory varies with credit. Prerequisite: Permission of instructor.

BSL 299 Selected Topics in Biology, Subtitle required (1-3)
Recent trends and discoveries in selected areas of biology will be presented in a seminar format. Emphasis will be placed on discussion and critical thinking. May be repeated with different subtitle for a maximum of six credits. Prerequisite: Permission of instructor.

**BT 101 — Introduction to Biotechnology**
Hours: 1
Course ID: 004277
A survey course designed to introduce current and future applications of biotechnology. Students will also learn about biotechnology career opportunities and bioethics. The course platform consists of lectures and discussions by biotech professionals and faculty, as well as student discussions and presentations. Lecture: 1 hour.

**BT 110 — Nucleic Acid Methods**
Hours: 4
Course ID: 004984
Designed for students entering the workforce as laboratory assistants in the biomedical field. Topics include theory of DNA structure and function. Special emphasis on laboratory skills in a variety of DNA manipulations. Prerequisite: (BIO 112 and BIO 113) or (BIO 150 and BIO 151) and CHE 105 and CHM 105 (all with grade of C or better) or consent of instructor. Lecture: 2 credits (30 contact hours); Laboratory: 2 credits (60 contact hours).

**BT 201 — Biotechnology Techniques I**
Hours: 4
Course ID: 005620
Introduces theory and techniques applicable in the field of biotechnology. Covers media and solution preparation, use of analytical equipment, and laboratory safety. Includes various nucleic acid techniques gene expression and purification, and bioinformatics. Prerequisite: A semester of college biology with lab or college chemistry with lab. Lecture: 2 credits (30 contact hours). Lab: 2 credits (60 contact hours).

**BT 202 — Biotechnology Techniques II**
Hours: 4
Course ID: 005621
Covers various protein techniques, extraction and purification, and assays. Prerequisite: BT 201. Lecture: 2 credits (30 contact hours). Laboratory: 2 credits (60 contact hours).

**CAD 100 Introduction to Computer-Aided Design (3)**
An emphasis will be placed on techniques of computer drafting; construction of straight and curved lines; orthographic and axonometric views and sections; dimensions, tolerances, and notes; as well as an introduction to the terminology associated with CAD. Basic computer operations involving move, copy, delete, and save are included, along with drawing manipulation involving translation, rotation, zooming, panning, and windowing. Prerequisites: ME 105 or ET 102 or consent or instructor.

**CAD 150 Introduction to Programming CAD (3)**
Students will master fundamental principles of the computer language(s) that represents and interfaces with the main CAD software being used in the Computer Aided Design Technology Program. Mastery of these principles will enable students to write subroutines and programs to perform CAD functions not presently available in the main CAD software. Prerequisites: CIS 144 or consent of instructor.
CAD 200 Intermediate Computer Aided Design (3)
Students will develop familiarity with standard symbols associated with one or more application areas. Competency will be developed in advanced techniques of drafting, including complex curves, layering, and the production of three-dimensional wire models—with and without hidden lines. The students also will learn to calculate lengths and areas associated with the drawings, and will write simple programs in an appropriate high-level language to interface with the existing CAD software. Prerequisites: CAD 100 and CAD 150 or consent of instructor; ET 105 and ET 109 or consent of instructor.

CAD 201 Advanced 3D Modeling (4)
Students will learn to transform two-dimensional drawings into enhanced three-dimensional views. Emphasis will be placed on selecting the proper CAD equipment and software, and in using them to achieve the desired result. Detailed assembly drawings with associated views and sections will be produced. Advanced methods of performing translation, rotation, scaling, and zooming will be studied, and computer programs—both subprograms and standalone—will be written to interface with the main CAD software. Prerequisites: CAD 200 or consent of instructor.

CAR 126 Introduction to Construction Carpentry (3)
This course emphasizes the types, grades, sizes and standards of building materials including the types of fasteners and their correct uses. Students will also learn to correctly utilize and maintain commonly used hand and power tools. Safety in the lab and on the job site is stressed.

CAR 127 Introduction to Construction Carpentry Lab (1)
This course emphasizes the types, grades, sizes and standards of building materials including the types of fasteners and their correct uses. Students will also learn to correctly utilize and maintain commonly used hand and power tools. Safety in the lab and on the job site is stressed. Co-requisite: CAR 126.

CAR 140 Site Layout and Foundations (3)
Students will prepare materials, calculate the cost for a building site, and layout a site with a transit, locating property lines and corners. Students calculate the amount of concrete needed for footing and foundation walls and construct different types of foundations and forms.

CAR 141 Site Layout and Foundations Lab (2)
Students will prepare materials, calculate the cost for a building site, and layout a site with a transit, locating property lines and corners. Students calculate the amount of concrete needed for footing and foundation walls and construct different types of foundations and forms. Co-requisite: CAR 140.

CAR 150 Construction Forms (3)
This course will introduce the student to heavy and commercial construction. The student will receive information about rigging, mall forms, vertical piers and columns, on grade curb forms, horizontal beam forms, above grade slab systems, fire proof encasement forms, stair forms, bridge and bridge deck forms.

CAR 151 Construction Forms Lab (2)
This course will introduce the student to heavy and commercial construction. The student will receive information about rigging, mall forms, vertical piers and columns, on grade curb forms, horizontal beam forms, above grade slab systems, fire proof encasement forms, stair forms, bridge and bridge deck forms. Co-requisite: CAR 150.

CAR 190 Floor and Wall Framing (2)
The student will practice floor framing, layout and construction of floor frames. Cutting and installing floor and wall framing members according to plans and specifications will also be practiced.

CAR 191 Floor and Wall Framing Lab (2)
The student will practice floor framing, layout and construction of floor frames. Cutting and installing floor and wall framing members according to plans and specifications will also be practiced. Co-requisite: CAR 190.
CAR 196 Ceiling and Roof Framing (3)
This course covers roof types and combinations of roof types used in the construction industry. The emphasis of this course is on layout, cutting and installing ceiling joists, rafters, roof decking and roof coverings.

CAR 197 Ceiling and Roof Framing Lab (2)
This course covers roof types and combinations of roof types used in the construction industry. The emphasis of the course is on layout, cutting and install ceiling joists, rafters, roof decking and roof coverings. Co-requisite: CAR 196.

CAR 200 Exterior and Interior Finish (3)
This course presents basic concepts of building trim, gypsum wallboard, paneling, base, ceiling and wall molding with instruction on acoustical ceilings and insulation, wood floors, tile, inlaid adhesive and tools of the flooring trade. This course will continue to refine the techniques and skills taught in the previous carpentry courses. In this course, cost control, speed and precision are emphasized. In addition, students will perfect the skills associated with the exterior finishing of a house. Prerequisites: Permission of the instructor.

CAR 201 Exterior and Interior Finish Lab (3)
This course presents basic concepts of building trim, gypsum wallboard, paneling, base, ceiling and wall molding with instruction on acoustical ceilings and insulation, wood floors, tile, inlaid adhesive and tools of the flooring trade. This course will continue to refine the techniques and skills taught in the previous carpentry courses. In this course, cost control, speed and precision are emphasized. In addition, students will perfect the skills associated with the exterior finishing of a house. Co-requisite: CAR 200.

CAR 240 Cabinet Construction and Installation (3)
Students will lay out and plan the construction of base and wall cabinets. They will construct and install cabinets and special units, and sand and prepare wood surfaces for finishing. Prerequisites: CAR 126, CAR 127.

CAR 241 Cabinet Construction and Installation Lab (2)
Students will lay out and plan the construction of base and wall cabinets. They will construct and install cabinets and special units, and sand and prepare wood surfaces for finishing. Prerequisites: CAR 126, CAR 127; Co-requisite: CAR 240.

CAR 298 Practicum (2)
The Practicum provides supervised on-the-job work experience related to the student’s education objectives. Students participating in the Practicum do not receive compensation. Prerequisite: Permission of the instructor.

CAR 299 Cooperative Educational Program (2)
Co-op provides supervised on-the-job work experience related to the student’s educational objectives. Students participating in the Co-op Education program receive compensation for their work. Prerequisite: Permission of the instructor.

CET 150 Civil Engineering Graphics (3)
This course provides the opportunity for the student to learn the basic theory necessary to generate and understand typical civil engineering working drawings. The student will develop graphic communication skills using current industry standard software. Prerequisites: CAD 100 or ACH 195.

CET 200 Civil Engineering Materials (3)
The course will provide a practical look at current practice in the use of materials for civil engineering applications. Students will learn test procedures, design considerations, and overall evaluation methods for these materials. The course will include the study of soils, aggregates, concrete, and asphalt cement. Prerequisites: ACH 160.

CET 210 Structural Analysis and Design (3)
The course will cover building structure for civil engineering technology students, including different types of building loads and their effect upon the various materials used by architects, engineers and technologists. The students will be introduced to quality construction techniques utilizing steel, concrete and reinforced concrete.
Industry manuals, specifications and computer programs will be utilized to familiarize the student with current technology. Prerequisites: ACH 225.

**CET 220 Intermediate Surveying (4)**  
The course will include the application of surveying practices for route surveying for highways, construction staking, and topographic surveys. Students will perform deed research and evaluation, convert outdated deed descriptions into current measurements, and prepare record plats. Prerequisites: CE 211.

**CET 260 Hydrology and Drainage (3)**  
Students will be introduced to the fundamentals of hydrology, including hydraulics of open and closed systems, water quality and drainage. Characteristics of pressures and flows in pipes, storm water runoff, culvert and ditch flow will be studied. Prerequisites: ACH 160, ACH 225, and PHY 211, or consent of instructor.

**CET 280 Highway Design (3)**  
Students will be introduced to the fundamentals of highway design. Different components involved in designing a typical highway, including planning, surveying, mapping, and preliminary and final design will be explored using computer design software. Prerequisites: CAD 100 or ACH 185, MA 109, and CE 211.

**CET 295 Independent Problems (1-4)**  
A problem or special project, approved by the instructor, will provide an opportunity for independent study for Civil Engineering Technology students. This course may be repeated to a maximum of six credits. Prerequisites: Consent of instructor.

**CHE 120 The Joy of Chemistry (3)**  
Introduces non-science majors to the main concepts and applications of chemistry in our society. Lecture: 3 hours  
Prerequisite: (Math ACTE score of 19) OR (MT 120 or MT 122 with a grade of C or better)

**CHE 125 The Joy of Chemistry Laboratory (3)**  
Reinforces concepts covered in CHE 120 and introduces scientific inquiry through selected experiments. Laboratory: 3 hours. Prerequisite or concurrent: CHE 120

**CHE 140 Introductory General Chemistry (3)**  
Introduces topics in general chemistry, including properties of matter, stoichiometry, gases, atomic structure, bonding, acids and bases, oxidation and reduction, and nuclear chemistry. Intended for students interested in a one-semester course in general chemistry and recommended for students seeking careers in allied health fields. Lecture: 3 hours. Prerequisite: (Math ACTE score of 19) OR (MT 120 or MT 122 with a grade of C or better)

**CHE 145 Introductory General Chemistry Laboratory (1)**  
Reinforces concepts covered in CHE 104 and introduces basic laboratory techniques, methods, and instrumentation through selected experiments dealing with chemical and physical properties, qualitative analysis, and quantitative analysis. Laboratory: 3 hours. Prerequisite or concurrent: CHE 140.

**CHE 150 Introduction to Organic and Biological Chemistry (3)**  
Continues the sequence begun in CHE 140. Introduces topics in organic chemistry and biochemistry. Introduces organic functional groups, their reactions, and the chemistry of proteins, nucleic acids, carbohydrates, and lipids. Prerequisite: CHE 140 with a grade of “C” or better.

**CHE 155 Introduction to Organic and Biological Chemistry Laboratory (1)**  
Reinforces concepts covered in CHE 150 and introduces basic laboratory techniques, methods, and instrumentation through selected experiments dealing with the preparation, characterization, and purification of organic compounds and the reactions of biomolecules. Laboratory: 3 hours. Prerequisite or concurrent: CHE 150

**CHE 170 General College Chemistry I (3)**  
Focuses on major chemical topics, including stoichiometry, atomic structure, properties of matter and the relationship between molecular structure and chemical behavior. Emphasizes solving of mathematical problems which illustrate the principles of chemistry. Designed for students in the sciences, engineering, and pre-professional
programs. Lecture: 3 hours. Prerequisite: (ACTE math score of 21) OR (College Algebra with "C" or better) OR (CHE 130 OR CHE 140 OR CHE 160 with a grade of “C” or better) OR (Appropriate score on math or chemistry placement exam).

CHE 175 General College Chemistry Laboratory I (1)
Reinforces concepts covered in CHE 170 and introduces basic laboratory techniques, methods, and instrumentation through selected experiments. Emphasizes both quantitative and qualitative techniques. Laboratory: 3 hours. Co-requisite or prerequisite: CHE 170.

CHE 180 General College Chemistry II (3)
Continues CHE 170. Focuses on major chemical topics, including acid-base chemistry, kinetics, thermodynamics, and chemical equilibrium. Emphasizes solving of mathematical problems which illustrate the principles of chemistry. Designed for students in the sciences, engineering, and pre-professional programs. Lecture: 3 hours. (CHE 170 with a grade of “C” or better) and (College Algebra with “C” or better).

CHE 183 General College Chemistry II Workshop (1)
Focuses on problem solving and further application of CHE 180 or CHE 185 course materials. Offered on a pass-fail basis only. Lecture: 1 hour. Co-requisite: CHE 180 or CHE 185. If students withdraw from the associated CHE 180/CHE 185 course, they must also withdraw from CHE 183.

CHE 185 General College Chemistry Laboratory II (1)
Reinforces concepts covered in CHE 105 and introduces basic laboratory techniques, methods, and instrumentation through selected experiments. Emphasizes both quantitative and qualitative techniques. Laboratory: 3 hours. Co-requisite or prerequisite CHE 180.

CHE 270 Organic Chemistry I (3)
Presents the fundamental principles of organic chemistry. Emphasizes the structures and properties of carbon-containing compounds. Introduces organic reactions, their mechanisms, and applications to synthesis. Lecture: 3 hours. Prerequisite: CHE 180 with a grade of “C” or better.

CHE 280 Organic Chemistry II (3)
Presents further applications of the principles of organic chemistry. Continues the study of organic reactions, their mechanisms, synthesis and modern spectroscopic techniques. Lecture: 3 hours. Prerequisite: CHE 270.

CHE 290 Special Topics in Chemistry: (Topic) (1-3)
Presents a topic in chemistry chosen by the instructor. Topics may vary from semester to semester at the discretion of the instructor; course may be repeated with different topics to a maximum of six credit hours. Lecture: 1 to 3 hours. Prerequisite: Consent of instructor.

CHE 295 Special Topics in Chemistry Laboratory: (Topic) (1-3)
Explores laboratory investigations that support the concepts presented in CHE 290 or other course requiring a laboratory component. Laboratory: 3 to 9 hours. Prerequisite: Consent of instructor.

CHE 299 Laboratory Research in Chemistry: (Topic) (1-3)
Offers students the opportunity to perform research on a problem chosen by the instructor. Course may be repeated to a maximum of six credit hours. Laboratory: 3 to 9 hours. Prerequisite: Consent of instructor.

CHI/RAE 150 Beginning Chinese I (4)
A course in first semester Chinese language.
CHI/RAE 151 Beginning Chinese II (4)
A course in second semester Chinese language. Prerequisite: RAE 150 or equivalent.

CIS 100 – Introduction to Computers (3)
Familiarizes students with various types of computer hardware and software including the use of an operating system. Explores common program functions of key applications and special functions available in word processing, electronic spreadsheet, database, and presentation software. Teaches online skills and concepts including networking, electronic mail, Web browsing, and Internet research. Prerequisite: Basic Keyboarding Skills. Lecture: 3 credits (45 contact hours).

CIS 110 Operating Systems Concepts (3)
A conceptual and practical overview of operating systems is covered. Topics include preparing disk(s); creating, displaying, copying, and deleting files and directories; using batch files and text editors, graphical user interfaces, and memory management. Hands-on experience with hardware/software is provided. Prerequisites: Computer literacy course or consent of instructor.

CIS 120 – Program Design and Development (3)
Covers the design and development of computer programs for solving common business-oriented problems. Emphasizes programming concepts and techniques common to all languages. Uses a programming language to illustrate and practice these concepts. Lecture: 3 hours. Prerequisite: Computer literacy course, MT 120 or MT 122, or consent of instructor.

CIS 130 – Microcomputer Applications (3)
Instructs in use of microcomputer and current word processing, database, and spreadsheet software. Includes thesaurus and spell checker. Includes requirements, capabilities, limitations, and applications of these software packages. Prerequisite: CIS 100 or Equivalent or consent of instructor. Lecture: 3 credits (45 contact hours).

CIS 148 Visual BASIC I (3)
Provides students with the knowledge and skills to code, execute, and document comprehensive programs in Visual Basic. Involves the use of forms for input/output, controls to trigger events, structures to control program execution, sequential and random access of files, arrays, and error handling. Prerequisite: CIS 120 or consent of instructor. Lecture: 3 credits (45 contact hours).

CIS 155 C/C++ Programming I (3)
Introduces concepts and techniques involved in developing C/C++ applications including writing, compiling, testing, and debugging basic applications that use a graphical user interface. Covers programming concepts of structure fields, arrays, functions, file management, and error handling. Prerequisite: CIS 120 or Consent of Instructor. Lecture: 3 credits (45 contact hours).

CIS 248 Visual BASIC II: Desktop Applications (3)
Provides students with the knowledge and skills to design, develop, and implement Visual Basic applications designed to run on individual computers or workstations. Lecture: 2 hours; Laboratory: 2 hours. Prerequisite: Visual Basic I or consent of instructor.

CIT 103 Fundamentals of Computers (1)
Explores commonly used capabilities of computers with emphasis on computer basics and terminology as well as software packages. Gain hands-on experience with common productivity software, email, and Internet access. Note: This course does not fulfill the KCTCS computer literacy requirement.

CIT 105 Introduction to Computing (3)
Presents an overview of computer information systems, including concepts relating to terminology, computer hardware, software, and networks as well as the impact of computers on society, ethical issues in computing, and trends in information processing. Uses a microcomputer with systems software and applications software, including
a word processor, electronic spreadsheet, database management system, and web page editor to process data and present useful information. Note: basic computer knowledge or completion of CIT 103 is recommended.

CIT 110 Operating Systems Concepts (3)
A conceptual and practical overview of operating systems is covered. Topics include: user interfaces such as graphical user interfaces and command syntax interfaces; task management; file systems; network connectivity and resource sharing; and operating systems installation and maintenance. Students will be exposed to multiple operating systems. Hands-on experience with hardware and software is provided. Prerequisite: CIS/CIT 105 or consent of instructor. Lecture: 3 credits (45 contact hours).

CIT 111 Hardware and Software Systems Concepts (4)
Provides a conceptual and practical view of client operating systems and the hardware systems required to run them. Covers computer hardware components, operating system interfaces and management tools, peripheral device management, computer security, and basic networking components. Includes hands-on experience with hardware and software, and exposure to multiple operating systems. Prerequisite: CIT 105 or consent of instructor.

CIT 120 Programming Concepts (4)
Develops and designs language-independent computer programs used in solving problems including writing code for control and data structures common to most languages. Prerequisite: CIT 105 or concurrent and MA 108R (or equivalent) or consent of instructor.

CIT 130 Productivity Software (3)
Use of current word processing, spreadsheet, database, and presentation application software to solve common business problems. Cover basic features of each software application, as well as requirements, capabilities, and limitations. Prerequisite: CIS/CIT 105 or consent of instructor.

CIT 140 JavaScript I (3)
Code and execute JavaScript programs, which can be used to create dynamic behavior in elements of a Web page. Use programs to control the behavior of forms, buttons, and text elements, and can be used to write special-purpose calculators or create forms whose fields have built-in error checking. Prerequisite: CIT 120 and CIT 150; or consent of instructor.

CIT 143 COBOL I (3)
Code and execute error-free programs in the COBOL language, a level I programming language, including proper documentation. Use orderly, structured methodology for program development. Involve sequential input/output, report formatting, editing of data, numeric calculations, single level control breaks, and processing tables. Prerequisite: CIT 120 or consent of instructor.

CIT 144 Flash Programming with ActionScript I (3)
Provides students with the knowledge and skills necessary to program Flash applications with animations, video, audio, and end-user interactivity using the ActionScript programming language. Provides an equally balanced effort regarding the two main threads of the course: the theory of Flash ActionScript programming syntax, style, documentation, correctness, and efficiency; and the practice of Flash ActionScript program design, implementation, debugging, and testing. Requires students to complete a number of programming assignments. Prerequisite: CIT 105, CIT 111, CIT 120, CIT 130, and CIT 150; or consent of instructor.

CIT 145 Perl I (3)
Design, code, execute, and test scripts in the Perl programming language. Learn concepts including Perl variables, operators, and control structures as well as pattern matching, introductory Perl objects and modules, and Perl application scripts. Prerequisite: CIT 120 or consent of instructor.

CIT 148 Visual Basic I (3)
Design, code, test, and execute programs using the Visual Basic programming language. Cover topics including menus, dialogue boxes, push buttons, radio buttons, the graphical user interface, mouse input, fonts, and printing. Prerequisite: CIT 120 or consent of instructor.
CIT 149 Java I (3)
Code and execute applications in the Java programming language. Cover topics including standard control structures in Java applications, methods, arrays, object-oriented programming, and developing graphical user interfaces. Prerequisite: CIT 120 or consent of instructor.

CIT 150 Internet Technologies (3)
Provides students with a thorough study of traditional and emerging Internet technologies. Covers topics including Internet fundamentals, Internet applications, Internet client/server information delivery systems, and Internet client/server computing. Provides hands-on experience with a number of Internet applications, including rudimentary programming in an Internet environment. Prerequisite: CIT 120 or consent of instructor.

CIT 160 Data Communications and Networking (4)
Introduces data communications and networking concepts including hardware, software, transmission media, access methods, protocols, basic network configurations, and system design considerations. Includes configuration of simple local area networks. Focuses on hands-on introduction to networking using tools and hardware commonly found in home and small business environments. Completes the first of four courses that prepare students for the Cisco Certified Network Associate (CCNA) certification exam. Prerequisite: CIT 111 or consent of instructor.

CIT 170 Introduction to Database Design (3)
Introduces the standards for designing relational databases. Design criteria to include first, second, and third normal forms to eliminate modification anomalies. Review the capabilities of three major types of data models - hierarchical, network, and relational - as they apply to hypothetical sets of data objects. Experiences the creation of a logical design, and translation into a physical database using the relational model. Perform queries using both a host language interface and Structured Query Language. Prerequisite: CIT 130 or consent of instructor.

CIT 171 SQL I (3)
Provides students with an extensive introduction to database manipulation technology. Covers the SQL and PL/SQL programming languages. Create and maintain database objects, and store, retrieve, and manipulate data. Creates PL/SQL blocks of reusable application code. Prerequisite: CIT 120 or consent of instructor.

CIT 180 Security Fundamentals (3)
Provides foundation level security skills and knowledge. Includes a broad overview of information security topics including cryptography, organizational security, system security, access control, assessments and audits, and network security. Prerequisite: CIT 160 or consent of instructor.

CIT 211 Microsoft Windows Client Operating System (3)
This course provides students with the knowledge and skills necessary to install and configure Microsoft Windows client operating systems on stand-alone computers as well as on client computers that are part of a workgroup or domain. This course will also help prepare students for exams in the Microsoft certification exam series. Prerequisites: Admission into the CIT program and CIT 160, or consent of instructor.

CIT 212 Microsoft Windows Server Operating System (3)
This course provides students with the knowledge and skills necessary to install and configure Microsoft Windows server operating systems and to provide file, print and terminal services. This course will also help prepare students for exams in the Microsoft certification exam series. Prerequisite: Admission into the CIT program and CIS/CIT 211; or consent of instructor.

CIT 213 Microsoft Windows Client and Server Configuration (3)
Covers installation and configuration of Microsoft Windows client and server operating systems. Helps prepare students for exams in the Microsoft certification exam series. Prerequisite: CIT 111 and CIT 160; or consent of instructor.

CIT 217 UNIX Administration (3)
Provides students with the knowledge and skills necessary to perform post-installation and day-to-day
administration tasks in a single-domain or multiple-domain UNIX based network. CIT 111 and CIT 160; or consent of instructor.

**CIT 218 Advanced UNIX Administration (3)**
Provides the core foundation for supporting the Unix operating system. Provides support professionals with the skills necessary to install, configure, customize, optimize, network, integrate, and troubleshoot Unix. Prerequisite: CIT 217 or consent of instructor.

**CIT 232 Applications Development and Utilization (3)**
Explores several aspects of customer service, including interacting with and training end users, and writing training manuals. Covers the writing of macros and modules for existing applications, preparation of documents for web publishing, and use of current collaboration tools and software. Prerequisite: CIT 130 and CIT 170; or consent of instructor.

**CIT 234 Advanced Spreadsheet Applications (3)**
Covers advanced features of a spreadsheet software package, including data tables, scenarios, financial functions, creating and using template files, using hyperlinks, multiple worksheets and 3D formulas, creating and using command buttons and macros to automate repetitive tasks, and using data management features to sort, perform queries, and extract useful information. Emphasizes integration among various software applications. Prerequisite: CIT 130 or consent of instructor.

**CIT 236 Advanced Database Applications (3)**
Covers advanced features of a current database software package, including creating and editing custom forms and reports, creating and using macros, and creating application systems and switchboard modules. Emphasizes integration among various software applications. Prerequisite: CIT 130 or consent of instructor.

**CIT 243 COBOL II (3)**
Provides coding skills needed to create COBOL programs involving direct access data files, interactive screen design, table manipulation, multiple-level control breaks, top-down design, and modular construction. Covers structured COBOL techniques including proper documentation to execute programs. Prerequisites: CIT 143 and MA 109; or consent of instructor.

**CIT 245 Perl II (3)**
Continues CIT 145, with this Level II programming language course focuses on the use of the Perl programming language in a Web server environment. Covers topics including ethics and the Web, advanced Perl programming constructs including objects and modules, Web form processing using Perl, security issues, and applications to e-commerce. Prerequisites: CIT 145 and CIT 150; or consent of instructor.

**CIT 248 Visual Basic II (3)**
Develops applications using Visual Basic with an emphasis on application design, record-handling routines, and database engine operations, including working with objects from Microsoft Office, creating ActiveX documents, and building Internet applications with these documents. Prerequisite: CIT 148 or consent of instructor.

**CIT 249 Java II (3)**
Continues CIT 149, by focusing on Java client/server programming for the internet. Covers topics including interfacing with HyperText Markup Language (HTML) documents, applets, Java Database Connectivity (JDBC), servlets, and networking. Prerequisite: CIT 149 and CIT 150; or consent of instructor.

**CIT 253 PHP/MySQL - Data-Driven Web Pages (3)**
Provides students with the knowledge and skills to design, implement, and manage a database-driven web site. Covers topics including the study of databases and web servers in e-commerce, transaction processing and client-side and server-side web scripting, including experience in creation of a database driven web site. Prerequisite: CIT 150, CIT 170; or consent of instructor.
CIT 255 Internet Server Administration (3)
Provides an in-depth study of the functions required to configure, maintain, and secure Internet servers. Presents security risks unique to Internet services as well as solutions to these risks. Includes hands-on experience with setting up a server, configuring services, and troubleshooting server problems. Prerequisite: Level I Network Technologies Specialization Sequence or consent of instructor.

CIT 260 Network Hardware Installation and Troubleshooting (3)
Provides students with the knowledge and skills necessary to design, install, configure, and troubleshoot cabling systems and equipment used to connect a local area network. Prerequisite: CIT 160 or consent of instructor.

CIT 261 Microsoft Windows Directory Services Administration (3)
Provides students with the knowledge and skills necessary to install, configure, and administer Microsoft Windows Directory Services. Focuses on implementing Group Policy and understanding the Group Policy tasks required to centrally manage users and computers. Helps prepare students for exams in the Microsoft certification exam series. Prerequisites: CIT 213 and CIT 269; or consent of instructor.

CIT 262 Microsoft Windows Network Infrastructure (3)
Provides students with the knowledge and skills necessary to install, configure, manage, and support a network infrastructure using a Microsoft Windows server operating system. Helps prepare students for exams in the Microsoft certification exam series. Prerequisites: CIT 213 and CIT 269; or consent of instructor.

CIT 263 Advanced Topics Microsoft Windows (1-6)
Covers concepts and/or skills from special areas of interest in Microsoft Windows operating systems. Focus on specific topics that will vary from semester to semester at the discretion of the instructor. Prerequisite: CIT 213 or consent of instructor.

CIT 264 Microsoft Server Administration (3)
Focuses on the deployment, configuration and management of servers that support users and applications, especially Web Servers, Terminal Servers, SharePoint Servers and File Servers. Prerequisites: CIT 261 and CIT 262; or consent of instructor.

CIT 265 Microsoft Applications Server Infrastructure (3)
Focuses on planning a Microsoft server infrastructure as well as managing the server operating system, file and directory services, software distribution and updates, and troubleshooting. Prerequisites: CIT 261 and CIT 262; or consent of instructor.

CIT 266 Microsoft Enterprise Administration (3)
Focuses on Windows server administration at the enterprise level. Covers planning networks and services, designing core identity and access management components, implementing a public key infrastructure, planning for restructuring forests and domains, and designing a virtualization strategy. Prerequisite: (CIT 261 and CIT 262 and 264) or consent of instructor.

CIT 269 Internet Protocols (3)
Provide students with the knowledge and skills to install, configure, manage and troubleshoot internetworks using TCP/IP and its associated protocols. Prerequisites: CIT 111 and CIT 160; or consent of instructor.

CIT 271 SQL II (3)
Provides knowledge and skills needed to write PL/SQL procedures, including the creation or management of PL/SQL program units and database triggers using SQL statements. Uses the Procedures Builder and SQL *Plus environments. Uses advanced features of PL/SQL to design and interface with the database and other applications. Prerequisite: CIT 171; or consent of instructor.

CIT 280 Internship (3)
Provides on-the-job experience in computer & information technologies, requiring a minimum of 120 clock hours of
appropriate experience approved by the faculty member (40 clock hours per credit); requires a learning contract, signed by the student, faculty member, and supervisor. Note: Course is offered on pass-fail basis only. Prerequisite: Consent of instructor.

CIT 281 Routing (4)
Provides students with the skills necessary to understand and apply concepts related to networking hardware. Covers advanced TCP/IP concepts such as IP addressing and subnetworks, beginning router configuration, routed and routing protocols. Completes one of a series of four courses that prepares students for the Cisco Certified Network Associate (CCNA) certification exam. Prerequisite: CIT 160 or consent of instructor.

CIT 282 Switching (4)
Provides students with the skills necessary to understand and apply advanced networking concepts. Covers local area network (LAN) switching, virtual local area networks (VLANs), advanced network design concepts, advanced router configuration, and advanced network management projects. Completes one of four courses that prepares students for the Cisco Certified Network Associate (CCNA) certification exam. Prerequisite: CIT 160 or consent of instructor.

CIT 283 Wide Area Network Design and Management (4)
Provides students with the skills necessary to understand and apply advanced principles and applications in deploying networking hardware. Covers WAN design, WAN connectivity protocols such as PPP, ISDN, and Frame Relay, as well as advanced network management projects. Completes the final of four courses that prepares students for the Cisco Certified Network Associate (CCNA) certification exam. Prerequisite: CIT 281 and CIT 282; or consent of instructor.

CIT 289 Network Security (3)
Provides the knowledge and skills necessary to understand and defend against a variety of computer and network attacks. Focuses on both the offensive techniques used to launch attacks and the defensive techniques required to defend computers and networks. Prerequisite: CIT 180 and Level 1 Network Technologies Specialization; or consent of instructor.

CIT 291 System Development and Implementation (4)
Designed for Computer & Information Technologies students who have completed a significant portion of their degree course work. Requires students to use their knowledge of information technology concepts to complete a comprehensive project including a detailed project plan, implementation, documentation, and final presentation. Prerequisite: Level 1 Network Technologies Specialization Sequence or Level II Programming Language; or consent of instructor.

CIT 294 Seminar in Internet Technologies (3)
Incorporates research, study, and discuss current and emerging topics, issues, and trends in Internet technologies. Requires participation in class presentations, as well as individual and/or group projects involving Internet technologies. Prerequisite: CIT 253 or consent of instructor.

CIT 295 Independent Problems in Computer and Information Technologies: (Topic) (1-3)
A problem or special project, approved by the instructor, provides an independent study objective for Computer Information Systems students. This course may be repeated to a maximum of three credits hours. Prerequisite: None.

CIT 299 Special Topics in CIT: (Topic) (1-3)
This course will deal with concepts and/or skills from special areas of interest in computer information systems. Topics vary from semester to semester at the discretion of the instructor. May be repeated with different topics to maximum of 6 credit hours. Prerequisite: (variable) given when topic is identified, or consent of instructor.

CJ 101 Introduction to Criminal Justice (3)
An introduction to the philosophical and historical background of law enforcement agencies, processes, purposes and functions. It includes an evaluation of law enforcement today, including current trends and career orientation. [Previously LEN 101]
CJ 102 Introduction to Corrections (3)
This course is an introduction to the processes, procedures and issues in modern corrections.

CJ 105 Police Supervision (3)
This course gives students the basic understanding of the administrative and supervisory roles within a police department. [Previously LEN 105]

CJ 110 Principles of Asset Protection (3)
This course gives an introductory understanding to private security procedures.

CJ 201 Introduction to Criminalistics (3)
Designed to give the student a basic knowledge of crime scene protection, collection, preservation, and identification of evidence, including proper search, dusting latent prints, casting, fingerprint classification, and use of crime laboratory in crime detection and prosecution.

CJ 202 Issues and Ethics in Criminal Justice (3)
This course gives an advanced understanding of the issues and problems within criminal justice. Prerequisite: CJ 101.

CJ 203 Community Corrections/Probations & Parole (3)
Community Corrections, probation, and parole and philosophy and design of various programs throughout the country are addressed. Community-based punishments are contrasted and compared to incarceration in terms of goals, costs and perceived benefits. Alternatives to incarceration are discussed in areas such as electronic monitoring and house arrest, intensive supervision, probation and shock incarceration. Special needs offenders and requirements of their supervision are also examined. Prerequisites: CJ 101 or CJ 217. [Previously LEN 207]

CJ 204 Criminal Investigations (3)
Fundamentals of criminal investigation, crime scene search and recording, collection and preservation of physical evidence, scientific aids, MODUS operandi, sources of information, interviews and interrogation, follow-up, and case preparation. [Previously LEN 204]

CJ 208 Delinquency and the Juvenile Justice System (3)
An introduction to the processes, procedures, and issues in the modern juvenile justice system. [Previously LEN 208]

CJ 210 Physical Security Technology & Systems (3)
This class introduces facility security with the use of environmental design and integrated electronic technology (cameras, monitors, alarms).

CJ 211 Liability & Legal Issues (3)
This course provides an overview of legal aspects of security. The class focuses on civil and criminal law, liability of asset protection, use of force, false imprisonment, negligent security, invasion of privacy and many other pertinent security legal issues.

CJ 215 Police Patrol (3)
his course gives a basic understanding of police operations and programs. [Previously LEN 104]

CJ 216 Criminal Law (3)
This course is a basic overview to criminal laws.

CJ 217 Criminal Procedures (3)
This course is an overview of criminal procedure laws.

CJ 220 Introduction to Computer Forensics for Criminal Justice (3)
Introduces the study of cybercrime with an emphasis on planning, detection, and response with the goals of counteracting and overcoming hacker attacks and computer related offenses. Malicious activities will be logged and forensic tools will be used to gather court admissible evidence.

Prerequisite: CIS 100 with a grade of C or greater.

Lecture: 3 credits (45 contact hours)

CJ 222 Prison & Jail Administration (3)
Correctional procedures and administration are introduced. Course includes a historical perspective and a study of future trends.

CJ 279 Terrorism and Political Violence (3)
Provides an introduction to the study of terrorism and terrorist organizations. Introduces the student to the diverse definitions of terrorism and the social and political consequences of varying definitions, behavioral aspects of terrorist and the various justifications for terrorist activities.

Lecture: 3 credits (45 contact hours)

CJ 290 Internship in Criminal Justice (3)
The Criminal Justice internship is designed to broaden student’s law enforcement education experience through appropriate criminal justice observation and work assignments. The experience will allow students to explore the various fields of interest in criminal justice field experience in an approved agency. Prerequisites: Sophomore standing and completion of at least 12 semester hours of Criminal Justice work.

CJ 299 Selected Topics in Law Enforcement (3)
Recent trends and investigations in selected areas of law enforcement will be presented in seminar format. This course may be repeated to a maximum of 12 units. Prerequisite: Consent of instructor. [Previously LEN 299]

CLA 131 Medical Terminology from Greek and Latin (3)
Latin and Greek roots, prefixes, and suffixes as found in medical terminology. Primarily for pre-medical, pre-dental, pre-nursing, and pre-veterinary students, but others will be admitted for help in vocabulary building.

CMS 142 Communications Practicum (1-4)
Student works a minimum of two hours each week with the college newspaper.

CMS 153 Newspaper Internship (4)
Student works for a newspaper a minimum of 160 hours. Prerequisite: JOU 204.

CMS 185 College Reading (3)
CMS 185 is designed to improve textbook reading at the college level by developing vocabulary techniques, comprehension strategies and understanding of textbook graphics. Theories and strategies taught in the course are applied to college level reading materials.

COE 199 Cooperative Education (1-8)
Cooperative Education is a planned and evaluated work experience related to a student’s educational objective for which the student receives both financial remuneration and academic credit. One credit hour is awarded for completion of 80 hours of approved work experience and for completion of additional required activities.
COED 198  Instructor consent required Practicum (1-9)

Provides a planned and evaluated work experience related to the student's educational objective for which the student receives academic credit but no financial remuneration.

Prerequisite: Consent of instructor.

COM 101 Introduction to Communications (3)
An introduction to the process of communication as a critical element in human interaction and in society. Designed to enhance effective communication and informed use of the mass media.

COM 181 Basic Public Speaking (3)
Gives platform experience in the fundamentals of effective speaking. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

Com 249 Mass Media and Mass Culture (3)
Examines the interplay between the technology and content of the mass communications media and culture. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

COM 252 Introduction to Interpersonal Communication (3)
Examines basic verbal and nonverbal concepts affecting the communication process in various interpersonal contexts. Requires participation in written and oral activities designed to develop and improve interpersonal skills. Includes perspective-taking, relationship and conversation management, effective listening, conflict management, communication climate, communication anxiety, and cultural/gender differences in interpersonal communication. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

COM 254 Introduction to Intercultural Communication (3)
An introduction to the topics of intercultural communication with an emphasis on the relationships between culture and communication, social/psychological variables, verbal/nonverbal language systems, intercultural communication perceptions, and conflict resolution. Contemporary issues in cross-cultural interaction, media representation, and daily social interactions will be practically applied to intercultural communication concepts. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

COM 281 Communication in Small Groups (3)
A study of communication processes in small group situations. Topics include conflict, leadership, and decision making. Students will participate in group discussions and develop skills in analyzing group performance. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

COM 287 Persuasive Speaking (3)
A study of the processes involved in attitude change, with emphasis on the preparation and delivery of persuasive messages. Prerequisites: (ENG ACT 18 or ENC 091 or ENG 101) or (RDG ACT 18 or RDG 030 or CMS 185 or DRE 030) or Consent of Instructor.

COS 114 Cosmetology I, 6-1 (14)
This course is designed to cultivate proper attitude and behavior patterns needed to create a successful Cosmetologist. Kentucky Statutes and regulations, safety, bacteriology, sanitation, infection control, first aid treatment, structure and disorders of the nail are studied. An introduction to the basic fundamentals of hair, skin and nail care, hair styling and shaping, manicures and pedicures, chemical and thermal services, and wigs. The student in
developing manipulative skills and practicing procedures utilizes mannequins and classmates. After 300 hours student begin to apply procedures on clients under the direct supervision of the instructor.

**Sub-Categories of COS 114**

**COS 1141 Introduction to Cosmetology (3)**
An introduction to professionalism and communication. Topics include Kentucky Statutes and Regulations, safety and decontamination.

**COS 1142 Basics of Cosmetology (3)**
Provides fundamental principles and skills of manicures, pedicures, facials, and scalp and hair care.

**COS 1143 Principles of Hair Design (3)**
Provides design elements and principles of hairstyling.

**COS 1144 Cosmetology Skills A (1)**
Focus on developing design elements of hair.

**COS 1145 Hair Structure, Disorders and Diseases (1)**
Focuses on the structure, diseases, and disorders of hair.

**COS 1146 Cosmetology Skills B (1)**
Provides basic principles of hair design and safety.

**COS 1147 Nail Structure: Diseases and Disorders (1)**
Focuses on nail structure, diseases and disorders.

**COS 1148 Skin: Structure, Disorders and Diseases (1)**
Focuses on skin structure, diseases and disorders.

**COS 116 Cosmetology II, 6-2 (14)**
A study of basic chemistry with emphasis placed on the physical and chemical properties of cosmetic materials. Electricity and light therapy are discussed and an in-depth study of anatomical structures affected by cosmetological services including disorders of the skin, scalp, hair, and nails. The instructor gives the students progressively more difficult assignments with close supervision.

**Sub-Categories of COS 116**

**COS 1161 Introduction to Cosmetic Chemistry (3)**
Basic study of cosmetic chemistry. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1162 Chemical Services (3)**
Basic chemical services. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1163 Massage Techniques (3)**
Study of massage techniques. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1164 Cosmetic Techniques Lab (1)**
Provides an opportunity to apply chemical services. Focuses on perms, color application and straightening of hair. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1165 Electricity & Light Therapy for Cosmetology (1)**
Study of electricity and light therapy. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144
and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1166 Intermediate Hair Design Lab (1)**
Continues the application of hair design theory and skills. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1167 Facials (1)**
Theory of facials. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 1168 Makeup and Hair Removal (1)**
Provides the theoretical base for application of makeup. Hair removal principles and techniques. Prerequisites: ((COS 1141 and COS 1142 and COS 1143 and COS 1144 and COS 1145 and COS 1146 and COS 1147 and COS 1148) or COS 114 with a grade of C or greater).

**COS 135 Special Problems (1-8)**
This is a course designed for a student who has demonstrated a need for a specific study. This course may be repeated for a maximum of 8 credit hours.

**COS 200 Student Teaching I, 7-1 (19)**
This course is an introduction to teaching methods used in training cosmetology and nail technology students. This is inclusive of theory class methods of lecture, media use and teaching methods. This class is an introduction to training teachers for methods used to teach the practical application of learned skills. Prerequisites: Cosmetologist’s licensure; one year work experience, apprentice license.

**COS 202 Student Teaching II, 7-2 (16)**
This course is to expand the apprentice instructor’s ability to apply various methods used to train cosmetology and nail technology students. This course gives preparatory work which enables the apprentice instructor to prepare for the Kentucky Board of Hairdressers instructor exam. Prerequisites: COS 200.

**COS 210 Student Teaching I, 5-1 (13)**
This course is an introduction to teaching methods used in training cosmetology and nail technology students. This is inclusive of theory, class methods of lecture, media use and testing methods. This class is an introduction to training teachers for methods used to teach the practical application of learned skills. Prerequisites: Cosmetologist’s license; One year work experience, apprentice cosmetologists instructor’s license.

**COS 212 Student Teaching II, 5-2 (13)**
This course continues to expand the apprentice instructor’s ability to apply various methods used to train cosmetology and nail technology students. Prerequisites: COS 210.

**COS 214 Student Teaching III, 5-3 (9)**
This course gives preparatory work which enables the apprentice instructor to prepare for the Kentucky Board of Hairdressers instructor exam. Prerequisites: COS 210, COS 212.

**COS 215 Special Problems (1-8)**
This is a course designed for a student who has demonstrated a need for specific studies. This course may be repeated for a maximum of 8 credit hours.

**COS 218 Cosmetology III, 6-3 (14)**
Provides knowledge of the structure and function of the human body, including the interaction of all the body systems in maintaining homeostasis. All phases of beauty salon management are studied, including interacting with clients, co-workers and supervisors. Laboratory experience is advanced with performance expectations set at a higher level.
Sub-Categories of COS 218

COS 2181 Anatomy for Cosmetology I (3)
Study of the structures and functions of the human body. Application of these studies in cosmetology services. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2182 Anatomy for Cosmetology II (3)
Study of the interaction of all body systems and the maintenance of homeostasis. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2183 Salon Management (3)
The study and application of all phases of salon management. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2184 Intermediate Chemical Services Lab (1)
The study of the interaction of all the body systems in maintaining homeostasis. Application of these studies in cosmetology services. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2185 Hair Enhancements (1)
Study of artificial hair. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2186 Client Services Lab (1)
Provides the student with the opportunity to demonstrate client services. Emphasis is on communication and positive public relation techniques. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2187 Intermediate Hair Shaping (1)
Hair shaping techniques for the intermediate practitioner. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 2188 Cosmetology Trends and Issues (1)
Trends and issues of cosmetology are covered. Prerequisites: ((COS 1161 and COS 1162 and COS 1163 and COS 1164 and COS 1165 and COS 1166 and COS 1167 and COS 1168) or COS 116 with a grade of C or greater).

COS 220 Cosmetology IV, 6-4 (12)
This course is designed for a total review of the cosmetology curriculum. A comprehensive written and practical exam is given in preparation for the State Board Licensure exam. Students implement their own judgment of procedures and solutions to be used on clients with supervision.

Sub-Categories of COS 220

COS 2201 Advanced Cosmetology I (3)
Processes and procedures for client services. Implementation of cosmetology processes and procedures on clients. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).

COS 2202 Advanced Cosmetology II (3)
Implementation of cosmetology nail and skin care processes and procedures for clients. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).
COS 2203 Advanced Lab I (1)
Practice all lab application techniques. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).

COS 2204 State Board Preparation (3)
Comprehensive written and practical exams in preparation for State Board Licensure exams. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).

COS 2205 Advanced Lab II (1)
Practice all lab application techniques. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).

COS 2206 Written Review (1)
Review of written/practical/procedures related to the State Board Examination. Prerequisites: ((COS 2181 and COS 2182 and COS 2183 and COS 2184 and COS 2185 and COS 2186 and COS 2187 and COS 2188) or COS 218 with a grade of C or greater).

COS 235 Special Problems II (1-3)
Designed for the student who has demonstrated need for individualized/specific instruction. Course may be repeated to a maximum of eight credit hours. Prerequisites: Consent of instructor.

COSE 100 Skin Care History/Opportunities/Professional Image (1)
History of esthetics, today's career opportunities and professional image. Topics also include Kentucky Statutes and Regulations. Prerequisites: High school diploma or equivalent and admission to esthetician program.

COSE 101 Basic Facials (7)
Analysis of skin types for facial products, massage techniques, and hair removal. Prerequisites: High school diploma or equivalent and admission to esthetician program.

COSE 102 Sanitation and Disinfection (1)
Guidelines that prevent the contamination of products, implements, and equipment for the prevention of disease. Prerequisites: High school diploma or equivalent and admission to esthetician program.

COSE 104 Physiology and Histology of the Skin (3)
Study of the structure, composition, and function of the skin. Prerequisites: High school diploma or equivalent and admission to esthetician program.

COSE 110 Esthetician I (17)
Covers the history of esthetics, today's career opportunities, and professional image. Includes Kentucky Statutes and Regulations, analysis of skin types for facial products, massage techniques, and hair removal. Provides guidelines that prevent the contamination of products, implements, and equipment for the prevention of disease. Includes the study of structure, composition, and function of the skin, skin conditions, disorders and diseases, and those treatable by the esthetician. Covers treatments related to skin and skin disorders. Prerequisites: High school diploma or equivalent and admission to esthetician program.

Sub-Categories of COSE 110

COSE 1101 Skin Care History/Opportunities/Professional Image (1)
Covers the history of esthetics, today's career opportunities, and professional image. Includes Kentucky Statutes and Regulations.

COSE 1102 Basic Facials (7)
Provides an analysis of skin types for facial products, massage techniques, and hair removal.
COSE 1103 Sanitation and Disinfection (1)
Guidelines that prevent the contamination of products, implements, and equipment for the prevention of disease.

COSE 1104 Physiology and Histology of the Skin (3)
Provides a study of the structure, composition, and function of the skin.

COSE 1105 Skin Diseases and Disorders (5)
Provides a study of skin conditions, disorders and diseases, and those treatable by the esthetician. Treatments related to skin and skin disorders.

COSE 200 Kentucky State Board Rules and Regulations (1)
Study of Kentucky State Board of Hairdressers and Cosmetologists rules and regulations. Prerequisites: (COSE 100 and 101 and 102 and 104) or consent of instructor.

COSE 201 Make-Up/Hair Removal (5)
Facial enhancements through the use of make-up artistry and application. Hair removal procedures and applications. Prerequisites: (COSE 100 and 101 and 102 and 104) or consent of instructor.

COSE 202 Anatomy/Physiology for the Esthetician (3)
Study of anatomy/physiology as it relates to esthetics. Prerequisites: (COSE 100 and 101 and 102 and 104) or consent of instructor.

COSE 203 Cosmetic Chemistry (3)
Study of organic/inorganic chemistry and cosmetic ingredients. Prerequisites: (COSE 100 and 101 and 102 and 104) or consent of instructor.

COSE 204 Skin Diseases and Disorders (5)
Study of skin conditions, disorders and diseases, and those treatable by the esthetician. Treatments related to skin and skin disorders. Prerequisites: (COSE 100 and 101 and 102 and 104) or consent of instructor.

COSE 210 Esthetician II
Provides a study of Kentucky State Board of Hairdressers and Cosmetologists rules and regulations and anatomy and physiology as it relates to esthetics, and organic/inorganic chemistry and cosmetic ingredients. Covers facial enhancements through the use of make-up artistry and application. Includes hair removal procedures and applications. Prerequisite: Cosmetologist's license; one year work experience, apprentice cosmetologists instructor's license.

Sub-Categories of COSE 210

COSE 2101 Kentucky State Board Rules and Regulations (1)
Provides a study of Kentucky Board of Hairdressers and Cosmetologists Rules and Regulations.

COSE 2102 Make-up/Hair Removal (5)
Covers facial enhancements through the use of make-up artistry and application. Includes hair removal procedures and applications.

COSE 2103 Anatomy/Physiology for the Esthetician (3)
Provides a study of anatomy/physiology as it relates to esthetics.

COSE 2104 Cosmetic Chemistry (3)
Provides a study of organic/inorganic chemistry and cosmetic ingredients.

COSE 250 Salon/Spa Business and Management (4)
Procedures for business management. Prerequisites: (COSE 200 and 201 and 202 and 203 and 204) or consent of instructor.
COSE 251 Esthetic Practices (5)
Practice of esthetic setup, sanitation, and application techniques. Demonstration of various cosmeceutical products. Prerequisites: (COSE 200 and 201 and 202 and 203 and 204) or consent of instructor.

COSE 252 Specialty Treatments (1)
Advanced esthetics which includes peels, deep pore cleansing, clinical skin care, aroma therapy, and spa/body treatments. Prerequisites: (COSE 200 and 201 and 202 and 203 and 204) or consent of instructor.

COSE 253 Advanced Clinical Skin Care (3)
Study of the functions and benefits of electrotherapy. Topics will include pre- and post-operative care for physician treatments. Prerequisites: (COSE 200 and 201 and 202 and 203 and 204) or consent of instructor.

COSE 270 Esthetician III (13)
Covers procedures for business and management, the practice of esthetic setup, sanitation, application techniques, advanced esthetics which include peels, deep pore cleansing, clinical skin care, aroma therapy, and spa/body treatments. Provides for the study of the functions and benefits of electrotherapy including pre- and post-operative care for physician treatments and the application of various cosmeceutical products.

Sub-Categories of COSE 270

COSE 2701 Salon/Spa Business and Management (4)
Covers procedures for business management.

COSE 2702 Esthetic Practices (5)
Covers esthetic setup, sanitation, and application techniques. Provides for the application of various cosmeceutical products.

COSE 2703 Specialty Treatments (1)
Covers advanced esthetics which include peels, deep pore cleansing, clinical skin care, aroma therapy, and spa/body treatments.

COSE 2704 Advanced Clinical Skin Care (3)
Covers the study of the functions and benefits of electrotherapy. Includes pre- and post-operative care for physician treatments.

CPR 100 CPR for Healthcare Professionals (1)
Cardiopulmonary resuscitation (Adult/Infant/Child) is a course designed to teach current emergency techniques relative to cardiac and/or respiratory arrest, as put forth by The American Heart Association, National Safety Council or American Red Cross. The American Heart Association, National Safety Council or American Red Cross standardized course qualifies a student for certification of cardiopulmonary resuscitation.

CS 115 Introduction to Computer Programming (3)
This course teaches introductory skills in computer programming using an object-oriented computer programming language. There is an emphasis on both the principles and practice of computer programming. Covers principles of problem solving by computer and requires completion of a number of programming assignments.

CS 215 Introduction to Program Design, Abstraction, and Problem Solving (4)
This course teaches introductory object-oriented problem solving, design, and programming engineering. An equally balanced effort will be devoted to the three main threads in the course: concepts, programming language skills, and rudiments of object-oriented programming and software engineering. Prerequisite: CS 115.

CS 216 Introduction to Software Engineering (3)
Software engineering topics to include: life cycles, metrics, requirements specifications, design methodologies, validation and verification, testing, reliability and project planning. Implementation of large programming projects
using object-oriented design techniques and software tools in a modern development environment will be stressed. Prerequisite: CS 215.

**CS 275 - Discrete Mathematics (4)**

Topics in discrete math aimed at applications in Computer Science. Fundamental principles: set theory, induction, relations, functions, Boolean algebra. Techniques of counting: permutations, combinations, recurrences, algorithms to generate them. Introduction to graphs and trees. Prerequisites: MA 113 and CS 115.

**DAH 101 Infection Control & Medical Emergencies (2)**

Current regulatory mandates, specific step-by-step procedures related to infection control, management of hazardous materials in the dental office, management of emergency situations and basic concepts of pharmacology are introduced in this course. Prerequisites: Admission into the Dental Assisting/Dental Hygiene Integrated Program and completion of program prerequisites: Dental Hygiene: ENG 101 and BIO 137; Dental Assisting: BIO 135 or BIO 137 and BIO 139.

**DAH 111 Preventive Dentistry (2)**

Dental plaque and its role in dental diseases. The methods and agents utilized by the dental auxiliary to prevent plaque-induced diseases. The role of the dental auxiliary in a variety of prevention oriented programs. Prerequisites: (Completion of (DAH 101 and DAH 121 and DAH 135) and (DAS 120 or DHG 120) with a grade of “C” or better.

**DAH 121 Dental Sciences I (3)**

Oral histology and embryology, head and neck anatomy, and tooth morphology as applicable to the practice of dental assisting and dental hygiene. Prerequisites: Admission into the Dental Assisting/Dental Hygiene Integrated Program and completion of program prerequisites: Dental Hygiene: ENG 101 and BIO 137; Dental Assisting: BIO 135 or BIO 137 and BIO 139.

**DAH 131 Oral Pathology (3)**

The disciplines of general pathology and oral pathology as related to dental hygiene care. Prerequisites: Completion of (DAS 120 or DHG 120) and (DAH 101 and DAH 121 and DAH 135) with a grade of ‘C’ or better.

**DAH 135 Oral Radiology (2)**

The theory and clinical practice of oral radiographic methods. History and development of x-radiation; properties and uses of x-radiation; radiation hygiene; exposing, processing and mounting of intraoral and extraoral films; and identification of radiographic anatomic landmarks. Prerequisites: Admission into the Dental Assisting/Dental Hygiene Integrated Program and completion of program prerequisites: Dental Hygiene: ENG 101 and BIO 137; Dental Assisting: BIO 135 or BIO 137 and BIO 139.

**DAH 224 Materials in Dentistry (2)**

The physical and chemical properties of dental materials with emphasis on composition and application. Prerequisites: Admission into the Dental Assisting/Dental Hygiene Integrated Program and completion of program prerequisites: Dental Hygiene: ENG 101 and BIO 137; Dental Assisting: BIO 135 or BIO 137 and BIO 139 or completion of DHG 130 and DHG 132 and DHG 136 with a grade ‘C’ or better.

**DAH 235 Practice Management (1)**

Legal, ethical and managerial aspects of the dental practice. Prerequisites: Completion of (DAH 101 and DAH 121 and DAH 135 and DAS 120) or (DHG 220 and DHG 221 and DHG 226) with a grade ‘C’ or better.

**DAS 120 Dental Assisting I (5)**

Stresses the preclinical/clinical application of foundational dental assisting skills. Prerequisites: Admission to Dental Assisting/Dental Hygiene Integrated Program and completion of program prerequisites: Dental Hygiene: ENG 101 and BIO 137; Dental Assisting: BIO 135 or BIO 137 and BIO 139.
DAS 220 Dental Assisting II (6)
Stresses the preclinical/clinical application of advanced dental assisting skills. Prerequisites: Completion of DAS 120 and DAH 101 and DAH 121 and DAH 135 and DAH 224 with a grade “C” or better.

DFT 102 Drafting Fundamentals (4)
Explores drafting and its processes: use and maintain equipment and supplies; determine line weights; measure and read line lengths with drafting scales; measure angles; and draw lines, circles, arcs, and irregular curves. Freehand and mechanical lettering, geometric construction, freehand sketching, and beginning orthographic projection. Characteristics of lines and planes in orthographic projection and the principles applied to show the size and shapes of projects. Dimensioning techniques for orthographic drawings.

DFT 108 Introduction to Surveying (3)
Introduces the elements of surveying including measurements, distance corrections, leveling, angles, area computation, computer calculations, topographic surveying, electronic distance measuring instruments, construction surveying, GPS, and GIS.

DFT 112 Engineering Graphics (4)
Includes exploration of lines and planes as they relate to orthographic projection to show the size and shape of objects. Includes application of principles and graphic elements of sectioning to show interior detail; the techniques involved in creating oblique projections, axonometric projections, and perspective drawings; and the dimensioning techniques and symbol usage common to all drafting disciplines. Prerequisites: DFT 102 with a grade of “C” or better or approval of program coordinator.

DFT 122 Introduction to Computer Aided Drafting (4)
Uses computer graphic workstation in the application of fundamental principles and capabilities of CAD, basic drafting conventions, and operations. An in-depth study of computer aided drafting commands, terminology, command utilization, and skill development. Prerequisites: DFT 102 with a grade of “C” or better or approval of program coordinator.

DFT 130 Descriptive Geometry (4)
Examines the spatial relationships between points, lines, and planes in various orthographic projections with graphical solutions; explores the processes to solve problems using auxiliary view projection methods, revolutions, intersections, and developments. Prerequisites: DFT 112 with a grade of “C” or better or approval of program coordinator.

DFT 152 Intermediate Computer Aided Drafting (4)
Uses CAD software to produce advanced two- and three-dimensional object drawings. Advanced techniques of drafting, layering, and symbols associated with one or more design applications. Calculations of perimeters, areas, and mass associated with the drawings. Prerequisites: DFT 122 with a grade of “C” or better or approval of program coordinator.

DFT 212 Industrial Drafting Processes (4)
Explores weldment design, welding symbols, welding processes, and fabrication techniques, tool and die, and jig and fixture drawings. Design specifications, pattern drawings, casting, forming processes, and mechanical drawing principles in relation to the manufacturing industry. Screw-thread design and related fastening concepts as they relate to manufactured items and construction. Pre-requisites: DFT 122 with a grade of “C” or better or approval of program coordinator.

DFT 222 Mechanical Design (4)
Explores the design process involved in the development of mechanical working drawings and the design principles in various manufacturing disciplines; gear drawing and design, and cam and follower drawing and design. Design principles, mechanical adaptation, and their drawing practices. Mechanical assemblies, machine design, power transmission, bearings, and seals in assemblies. Shop processes involved in these mechanical designs. Prerequisites: DFT 122 with a grade of “C” or better or approval of program coordinator.
DFT 240 Advanced Dimensioning and Measurement (4)
Presents an in-depth study of advanced industrial dimensioning principles, tolerances, fits, and A.N.S.I. standards. Exploration of the shape and geometric characteristics of parts through geometric tolerancing. Prerequisites: DFT 112 with a grade of “C” or better or approval of program coordinator.

DFT 250 Advanced Computer Aided Drafting (4)
Introduces fundamental principles of the computer language(s) that represents and interfaces with the main CAD software. Write subroutines and programs to perform CAD functions not available in the main CAD software. Prerequisites: DFT 122 with a grade of “C” or better or approval of program coordinator.

DFT 252 Parametric Modeling (4)
Introduces Parametric Modeling and Design of a CAD workstation in exploring the techniques associated with drafting and design using Parametric modeling software. Introduces creation of parametric models and explores associative function and flexibility of concurrent part design. Prerequisites: DFT 152 with a grade of "C" or better or approval of program coordinator.

DFT 291 Special Problems (2)
This course is designed to allow the student to develop a portfolio of mechanical drawings specific to the occupational opportunities in his/her geographical location. Assignments and curriculum will vary as determined by the program instructor. Prerequisite: Permission of the instructor.

DFT 292 Industrial Applications (4)
Develop a portfolio of mechanical drawings specific to the occupational opportunities in specific geographical locations. Assignments and curriculum will vary as determined by the program instructor. Prerequisite: Approval of program coordinator.

DFT 293 Special Problems (1-4)
Expands the portfolio of mechanical drawings specific to the occupational opportunities in specific geographical locations. Prerequisite: Approval of program coordinator.

DFT 298 Practicum (1-3)
Provides supervised work experiences related to the student’s educational objectives. Students participating in the Practicum do not receive compensation. Prerequisite: Approval of program coordinator.

DFT 299 Cooperative Education (1-3)
Provides supervised on-the-job work experience related to the student’s educational objectives. Students participating in the Co-op Education program receive compensation for their work. Prerequisite: Approval of program coordinator.

DH 120 Dental Hygiene I (5)
The basic assessment and clinical skills, related theory, professional role and responsibilities of the dental hygienist as a member of the dental health team are included. Prerequisites: Completion of BIO 137 and BIO 139, both with a grade of C or better and acceptance into the Dental Hygiene Program.

DH 121 Oral Biology I (3)
Oral histology and embryology, regional head and neck anatomy, and dental anatomy applicable to the practice of dental hygiene are included in this course. Prerequisites: Completion of BIO 137 and BIO 139, both with a grade of C or better and acceptance into the Dental Hygiene program.

DH 130 Dental Hygiene II (4)
This course is a continuation of DH 120 which prepares the student to provide treatment that includes preventative and therapeutic procedures to promote and maintain oral health and assist the patient in achieving oral health goals. Prerequisites: Completion of DH 120, DH 121 and BSL 214 (or BIO 226), all with a grade of C or better.

DH 131 Oral Biology II (5)
The disciplines of general pathology, oral pathology, pharmacology, and therapeutics as related to dental hygiene
care are covered in this course. Prerequisites: Completion of DH 120, DH 121 and BSL 214 (or BIO 226 all with a grade of C or better.

**DH 135 Dental Radiology (3)**
The theory and clinical practice of oral radiographic methods are presented in this course. Also included are: history and development of x-rays; properties and uses of x-rays; radiation hygiene; exposing, processing and mounting intraoral and extraoral radiographs; identification of radiographic anatomical landmarks; and advancements in computer imaging technology in dental radiology. Prerequisites: Completion of DH 120, DH 121 and BSL 214 (or BIO 226) all with a grade of C or better.

**DH 136 Periodontics for the Dental Hygienist I (2)**
This course focuses on the clinical, histological and radiographic differences between healthy and unhealthy periodontal tissues. Topics to be discussed also include etiology, risk factor assessment, pathogenesis and classification of periodontal diseases. Prerequisites: Completion of DH 120, DH 121 and BSL 214 (or BIO 226), all with a grade of C or better.

**DH 220 Dental Hygiene III (4)**
Dental Hygiene III emphasizes the continued treatment of clinical patients. Treatment and management of dental patients with special needs are also addressed with attention to appropriate changes in dental treatment in response to a patient’s medical condition. Prerequisites: Completion of DH 130, DH 131, DH 135, DH 136 and NFS 101, all with a grade of C or better.

**DH 222 Special Needs Patients (3)**
Focus is on oral healthcare that is tailored to the specific needs of persons with a variety of medical, disabling or mental conditions. Innovative approaches to serving special care populations are discussed with special emphasis on pharmacological concerns and on treatment modifications. Prerequisites: Completion of DH 130, DH 131, DH 135, DH 136 and NFS 101, all with a grade of C or better.

**DH 224 Dental Materials (2)**
The physical and chemical properties of dental materials and their application are introduced. Prerequisites: Completion of DH 130, DH 131, DH 135 and DH 136, all with a grade of C or better.

**DH 226 Periodontics for the Dental Hygienist II (2)**
This course provides for the continuation and expansion of the content of Periodontics for the Dental Hygienist I. The role of the dental hygienist in the recognition of systemic implications as related to periodontal diseases is emphasized. Current advancements in the management of patients with periodontal disease are emphasized. Supportive periodontal therapy will be discussed and current surgical therapies will be introduced. Prerequisites: Completion of DH 130, DH 131, DH 135, DH 136 and NFS 101, all with a grade of C or better.

**DH 229 Local Anesthesia (2)**
Common oral local anesthesia injection techniques and the related background information are addressed in this course. Subjects include: anatomic considerations, armamentarium, basic injection techniques, record keeping, neurophysiology, related pharmacology, patient evaluation, complications and contraindications. The pharmacology, administration and contraindications of Nitrous Oxide are also included. This elective course satisfies the Kentucky State Dental Practice Act regarding “delegation of block and infiltration anesthesia and nitrous oxide analgesia to dental hygienists.” Prerequisites: Completion of DH 130, DH 131, DH 135 and DH 136 all with a grade of C or better.

**DH 230 Dental Hygiene IV (4)**
This course focuses on the mastery of all dental hygiene clinical skills utilized in treating patients. Prerequisites: Completion of DH 220, DH 221, DH 224, and DH 226, all with a grade of C or better.

**DH 235 Principles of Practice (1)**
This course covers the legal, ethical, and managerial aspects of dental hygiene practice. Prerequisites: Completion of DH 220, DH 222, DH 224 and DH 226, all with a grade of C or better.
DH 238 Community Dental Health (4)
Basic concepts in assessing community dental health needs are introduced. Planning, implementing and evaluating dental health programs, as well as current trends and issues in preventive dental health education, are discussed. Concepts related to reading and interpreting scientific literature are also included. Students must develop and present a community dental health project and scientific tabletop presentation. Prerequisites: Completion of DH 220, DH 222, DH 224 and DH 226, all with a grade of C or better.

DH 299 Independent Study in Dental Hygiene (1-4)
A special project or experience, approved by an instructor, provides an objective for independent study for dental hygiene technology students. This course may be repeated to a maximum of six credit hours. Prerequisite: Consent of instructor.

DIT 110 Introduction to Diesel Engines (3)
Fundamental concepts of the operation of two- and four-stroke diesel and gasoline engines. Topics include basic engine components and their functions, engine performance terminology, two- and four-stroke operation, combustion principles, and engine disassembly with basic hand tools. Co-requisite: DIT 111.

DIT 111 Introduction to Diesel Engines Lab (2)
Practical experience of concepts from DIT 110. Co-requisite: DIT 110.

DIT 112 Diesel Engine Repair (3)
Students learn to take a disassembled engine and evaluate the condition of each component. They identify the use or function of each component of the engine. Topics include cylinder block and components, cylinder heads and valve train components, and engine lubrication systems. Prerequisites: DIT 110, DIT 111 or ADX 150, ADX 151 Co-requisites: DIT 113

DIT 113 Diesel Engine Repair Lab (2)
Practical experience of concepts from DIT 112. Co-requisite: DIT 112.

DIT 150 Power Trains (3)

DIT 151 Power Trains Lab (2)
Practical application of concepts taught in DIT 150. Co-requisite: DIT 150.

DIT 160 Steering and Suspension (3)

DIT 161 Steering and Suspension Lab (2)

DLT 101 Dental Morphology (2)
The anatomical characteristics and dental terminology of the permanent human dentition are detailed. Other topics include dento-osseous structures, oral musculature, and the development of teeth. Waxing exercises of selected teeth are performed in the laboratory as a means of understanding tooth form and the development of manual dexterity. Prerequisites: Admission into the Dental Laboratory Technology Program or consent of instructor.

DLT 111 Dental Materials I (2)
The major content of this course includes an introduction to the study of dental materials including basic concepts in chemistry. Emphasis is placed on the chemical and physical properties of gypsum, resin, and wax used in dentistry. Basic manipulation of these materials is included in order to prepare the student for future use in the dental laboratory. Prerequisites: Admission into the Dental Laboratory Technology Program or consent of instructor.

DLT 112 Dental Materials II (2)
This course emphasizes the metallurgy of dental alloys including the mechanism of crystallization, strain hardening and the chemical process of corrosion. Materials associated with fabricating dental prostheses are studied and
include impression materials, cast alloys and wrought alloys. Hazard and infection control procedures in the dental laboratory are presented as well as basic study of applicable physics and unit conversion. Prerequisites: DLT 111 or consent of instructor.

DLT 121 Complete Dentures I (2)
The basic principles of complete denture prosthodontics is presented including the fundamentals of arranging and contouring artificial dentures. Identification of oral landmarks and changes that occur in the edentulous patient are discussed. Emphasis is placed on identifying the purpose and use of custom trays, baseplates and occlusion rims. Laboratory procedures include fabricating custom trays, baseplates, occlusion rims, and a complete set of dentures. Prerequisite: Admission into the Dental Laboratory Technology program.

DLT 122 Complete Dentures II (2)
Advanced principles of complete denture prosthodontics are presented including balanced, monoplane and lingualized occlusion. Emphasis is also placed on the considerations in the oral cavity that affect the success of removable prosthodontic treatment. Laboratory procedures include denture repairs, selective grinding and fabricating complete dentures. Prerequisite: DLT 121.

DLT 131 Removable Partial Dentures I (2)
The basic principles of removable partial denture prosthodontics are presented. Emphasis is placed on the fabrication procedures and understanding of the basics of survey and design. Detailed information about the various major and minor connectors is discussed as well as learning the Kennedy Classification system. Laboratory procedures include fabricating two removable partial dentures including the attachment of artificial denture teeth. Prerequisite: Admission into the Dental Laboratory Technology program.

DLT 132 Removable Partial Dentures II (2)
Advanced principles of removable partial denture prosthodontics is presented with emphasis on design principles. Detailed information about direct retainers, indirect retainers, rests and bases is discussed. Laboratory procedures involve fabricating three removable partial dentures including the attachment of artificial denture teeth. Prerequisite: DLT 131.

DLT 142 Occlusion (2)
Theories of occlusion; interarch and intraarch relationships; the temporomandibular joint and its movements; articulators, interocclusal records, and face-bow transfer; occlusal schemes; and restorative considerations in occlusal therapy are discussed and/or put to practical application in this course. Prerequisite: Admission into the Dental Laboratory Technology program.

DLT 151 Fixed Prosthodontics I (2)
The basic principles of crown and bridge fixed prosthodontics are presented including the fabrication of both single and multi-unit full metal restorations. Emphasis is placed on preparing and evaluating working casts, waxing anatomical tooth patterns, spruing, investing, burnout, casting, and polishing. Additional laboratory procedures include fabricating restorations on various types of articulators, developing functional occlusion, and soldering. Prerequisite: Admission into the Dental Laboratory Technology program.

DLT 152 Fixed Prosthodontics II (2)
The basic principles of metal ceramic fixed prosthodontics are presented including the fabrication of both single and multi-unit restorations. Emphasis is placed on esthetic restorations, preparing and evaluating working casts, waxing substructure patterns, spruing, investing, burnout, casting, and polishing. Additional laboratory procedures include applying opaque, dentin, and enamel ceramic powders and contouring fired porcelain. Prerequisite: DLT 151.

DLT 261 Applied Laboratory Techniques (8)
Students fabricate a more complex variety of dental prostheses in four specialty areas: complete denture prosthodontics, removable partial denture prosthodontics, dental ceramics, and fixed prosthodontics (crown and bridge). Curriculum content includes reinforcement of techniques and procedures that are taught in the 100 level Dental Laboratory Technology courses. Emphasis will be placed on management of laboratory time and project load to improve the quantity and quality of laboratory work. Prerequisites: DLT 122, DLT 132, DLT 142, and DLT 152.
DLT 262 Advanced Specialty Laboratory Techniques (8)
Students fabricate dental prostheses at a more advanced level in at least one of the following specialty areas: complete denture prosthodontics, dental ceramics, fixed prosthodontics (crown and bridge), orthodontic appliances, or removable partial denture prosthodontics. Emphasis is placed on incorporating productivity, flow time, and quality requirements. Laboratory experience is provided in the classroom or selected externships in local dental laboratories. Prerequisite: DLT 261.

DLT 281 Orthodontic Laboratory Techniques (2)
Fixed, removable, active and passive orthodontic appliances are studied in this course. Principles of tooth movement, classifications of malocclusion, orthodontic materials and their manipulation, orthodontic study models, and functional appliances will be discussed. Prerequisite: DLT 122.

DLT 291 Dental Laboratory Management, History and Ethics (2)
Dental laboratory management, business plans, financial planning, history of dentistry and dental technology, and those ethics and laws which are specific to dentistry will be presented. Prerequisite: Completion of all 100 level Dental Laboratory Technology courses.

DRE 010 Reading Laboratory (3)
Designed to improve reading comprehension and vocabulary skills, to develop a variety of reading rates, and to prepare students for college reading through individualized and/or group instruction and practice. Students will be recommended to this course based on the placement examination.

DRE 015 College Study Strategies (3)
Deals with the development or improvement of study strategies such as time management, study management in the content areas, organization of ideas, listening, note-taking, memory, test-taking, concentration, cognitive styles, etc. Pass/Fail.

DRE 030 Improving College Reading (3)
Designed to improve proficiency in reading comprehension, vocabulary, and critical reading skills. Strategies taught in the course are applied to college level reading materials. Students will be recommended to this course based on the placement examination.

ECO 101 Contemporary Economic Issues (3)
Covers contemporary economic issues such as inflation, poverty and affluence, globalization, and environmental pollution. (Credit will not be given for this course to students who have received prior credit in ECO 201 and/or 202, and/or ECO 260 and/or 261.)

ECO 201 Principles of Microeconomics (3)
Covers the allocation of scarce resources from the viewpoint of individual economic units. Topics include supply and demand, elasticity, costs, and markets.

ECO 202 Principles of Macroeconomics (3)
Covers how society’s needs are satisfied with the limited resources available. Includes issues such as inflation, unemployment, economic growth, globalization, and fiscal and monetary policy.

ED 101 Orientation to Education (3)
Introduces the roles and responsibilities of both the paraeducator and the classroom teacher. Recognizing the importance of communication and teamwork in the instructional environment, the course covers legal and ethical issues that might be encountered in the classroom, instructional support strategies that might be implemented by paraeducators, universal health and safety procedures. The student will be introduced to the design of learning environments that encourage active participation in individual and group settings. (Ten hours field work required.)

ED 102 Child and Adolescent Development (3)
Accquaints the student with the cognitive, social, moral, language, emotional, and physical development of children and adolescents. Students will develop an understanding of how these theories are applied in the modern classroom. (Ten hours field work required.)
ED 103 Introduction to Special Education (3)
An introductory course designed for all paraeducators. The student will be introduced to methods on the creation of a learning environment, basic classroom management theories, key principles and practices of special education, and the similarities and differences of individuals with and without exceptional learning needs. (Ten hours field work required.)

ED 104 Introduction to Behavior Management (3)
Introduces the student to strategies of classroom and behavior management that create a positive learning environment encouraging student self-advocacy, increased independence, and improved communication skills. This course will introduce behavior management strategies that encourage respect and value individual differences among children, youth, and adults and how consequences should be used to motivate positive student behavior. Chronic behavior problems will also be addressed. (Ten hours field work required.)

ED 105 Practical Experiences for the Paraeducator (3)
A capstone course for the paraeducator certificate and a component of the Teacher Associate option of the Education AAS degree. Students will complete their certificate portfolio in preparation for the Kentucky Paraeducator Assessment or Kentucky Department of Education approved alternative assessment. (150 hours fieldwork). Prerequisites: ED 101 and ED 102 and ED 103 and ED 104 or consent of coordinator.

ED 201 An Introduction to American Education (3)
A practical introduction to the teaching profession is presented for those considering a career in education. Topics include teaching as a profession, major educational philosophies, school reform, trends and issues in education, curriculum, and instruction. A field experience consisting of a minimum of 15 clock hours in approved educational activities is required. Prerequisites: ENG 101 or consent of instructor.

ED 280 Education Externship/Co-Op (3)
A capstone/portfolio course for the AAS degree in Education, designed to integrate program competencies and curriculum to create a cumulative portfolio which will demonstrate their professional abilities. Students in the teacher preparation option will prepare to take the Praxis I assessment. (150 hours field work). Prerequisite: All program courses or consent of coordinator.

EDP 202 Human Development and Learning (3)
Presents theories and concepts of human development, learning, and motivation and applies them to interpreting and explaining human behavior and interaction in relation to teaching across the developmental span from early childhood to adulthood. Requires field experience of a minimum of 15 clock hours in instructor-approved educational agencies. Prerequisites: PSY 100 or PY 110.

EDP 203 Teaching Exceptional Learners in the Regular Classroom (3)
Introduces the characteristics and instructional needs of exceptional learners with an overview of principles, procedures, methods, and materials for adapting educational programs to accommodate the integration of exceptional children in regular classrooms, when appropriate. Requires field experience of a minimum of 12 clock hours in instructor-approved educational agencies. Prerequisite: EDP 202 with an earned grade of C or higher.

EDP 202 Human Development and Learning (3)
Theories and concepts of human development, learning, and motivation are presented and applied to interpreting and explaining human behavior and interaction in relation to teaching across the developmental span from early childhood to adulthood. A field experience in a school or other educational agency is a required and basic part of the course. Prerequisite: PSY 100.

EDP 203 Teaching Exceptional Learners in Regular Classrooms (3)
An introduction to the characteristics and instructional needs of exceptional learners is presented with an overview of principles, procedures methods, and material for adapting education program to accommodate the integration of exceptional children in regular classrooms, when appropriate. A field experience in a school or other educational agency is a required and basic part of the course. Prerequisite: Successful completion of EDP 202 with an earned grade of C or higher.
EET 150 Transformers (2)
Focuses on the operation, installation and application of AC single-phase and three-phase transformers. Testing and maintaining transformer equipment are emphasized, with safety integrated as a core component of the study. Prerequisites: [(ENGT 110 and ENGT 114) with a minimum of “C”] or consent of Electrical Technology program advisor(s). Co-requisite: EET 151.

EET 151 Transformers Lab (1)
Focuses on the operation, installation and application of AC single-phase and three-phase transformers. Testing and maintaining transformer equipment is emphasized, with safety integrated as a core component of the study. Prerequisites: [(ENGT 110 and ENGT 114) with a minimum grade of “C”] or consent of Electrical Technology program advisor(s). Co-requisite: EET 150.

EET 154 Electrical Construction I (2)
Involves the study of materials and procedures used in construction wiring. Co-requisite: EET 155

EET 155 Electrical Construction I Lab (2)
Designed to give hands-on experiences with electrical materials and equipment in construction wiring. Co-requisite: EET 154.

EET 198 Practicum (2)
The practicum provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Practicum Education program do not receive compensation for their work. Prerequisite: Consent of instructor

EET 199 Cooperative Education Program (2)
Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work. Prerequisite: Consent of instructor

EET 250 National Electrical Code (4)
Emphasizes the importance of the National Electrical Code as it applies to electrical installations: electrical safety issues, prevention of fire due to the use of electrical energy, prevention of loss of life and property from the hazards that might arise from the use of electrical energy, and proper selection of electrical equipment for hazardous and non-hazardous environments. A learning resource in the preparation for electrical licensing examinations. Prerequisite: [(EET 154 and EET 155 and EET 252 and EET 253) or (EET 254 and EET 255) with minimum grade of “C”] or consent of Electrical Technology program advisor(s).

EET 252 Electrical Construction II (2)
Expands the knowledge and skills needed to work in commercial and industrial construction wiring. Prerequisites: Consent of instructor or EET 154. Co-requisite: EET 253

EET 253 Electrical Construction II Lab (2)
Provides hands-on experiences needed to work in commercial and industrial construction wiring. Co-requisite: EET 252.

EET 254 Electrical Construction (3)
This course involves the study of materials and procedures and expands the knowledge and skills needed to work in commercial and industrial construction wiring. Co-requisite: EET 255.

EET 255 Electrical Construction Lab (4)
Designed to give hands-on experiences with electrical materials and equipment in commercial and industrial construction wiring. Co-requisite: EET 254.

EET 264 Rotating Machinery (2)
Focuses on the underlying principles of rotating electrical equipment including DC and AC motors and generating
equipment construction, operating applications, and the maintenance of DC and AC motors and generating equipment. Prerequisites: [(ENGT 110 and ENGT 114) with a minimum grade of “C”] or consent of Electrical Technology program advisor(s). Co-requisite: EET 265.

EET 265 Rotating Machinery Lab (2)
Focuses on the principles of operation, application and maintenance of single-phase and three-phase AC motors and AC alternators, DC motors, DC generators. A study of and compliance with the National Electrical Code standards. Prerequisites: [(ENGT 110 and ENGT 114) with a minimum grade of “C” or greater] or consent of Electrical Technology program advisor(s). Co-requisite: EET 264.

EET 270 Electrical Motor Controls I (2)
This course addresses the diversity of control devices and applications used in industry today. Safety and electrical lockouts are also included. Prerequisites: Consent of instructor or ENGT110 and ENGT114 Co-requisite: EET 271.

EET 271 Electrical Motor Controls I Lab (2)
Provides practical experience in the use of control devices and their applications in industry today. Safety and electrical lockouts are included. Co-requisite: EET 270.

EET 272 Electrical Motor Controls II (2)
This course provides advanced study of motor controls in industry. The course addresses solid state relays, hall effect sensors, proximity detectors and photo detectors. Tasks include sketching, installing and troubleshooting the following: three phase controls, variable speed drives using relays as well as solid state devices, and introduction to programmable controls. Prerequisite: EET 270. Co-requisite: EET 273.

EET 273 Electrical Motor Controls II Lab (2)
This course provides hands-on experience in advanced studies in electrical controls used in industry including three-phase motor control and variable speed control using solid state devices and programmable controls. Prerequisite: EET 270. Co-requisite: EET 272.

EET 276 Programmable Logic Controllers (2)
Underlying principles and applications of programmable logic controllers including installation, logic fundamentals, and numbering systems; basic programming of inputs, outputs, timers, and counters, comparators, basic data manipulation, and safety circuits of industrial PLCs. Prerequisites: [(ENGT 110 and ENGT 114 and EET 270 and EET 272) or (EET 274) minimum grade of “C” or consent of Electrical Technology program advisor(s). Co-requisite: EET 277.

EET 277 Programmable Logic Controllers Lab (2)
Provides practical applications of programmable logic controllers including installation, logic fundamentals, and numbering systems; basic programming of inputs, outputs, timers, and counters, comparators, basic data manipulation, and safety circuits of industrial PLCs. Prerequisites: [(ENGT 110 and ENGT 114 and EET 265 and EET 271 and EET 273) with a minimum grade of “C”] or consent of Electrical Technology program advisor(s). Co-requisite: EET 276.

EET 281 Special Problems I (1)
A course designed for the student who has demonstrated specific special needs. Prerequisite: Permission of instructor.

EET 283 Special Problems II (2)
A course designed for the student who has demonstrated specific special needs. Prerequisite: Permission of instructor.

EET 285 Special Problems III (3)
A course designed for the student who has demonstrated specific special needs. Prerequisite: Permission of instructor.
EET 286 Programmable Logic Controllers II (2)
Focuses on sequencer instructions, shift registers, process control instructions, networking, communications, human to machine interfaces, and troubleshooting techniques used with programmable logic controllers. Prerequisites: EET 276 and EET 277 with a minimum grade of “C” or consent of Electrical Technology program advisor(s). Corequisite: EET 287.

EET 287 Programmable Logic Controllers II Lab (2)
Provides hands on lab applications dealing with sequencers, shift registers, networks, communication software, human to machine interfaces, analog devices, and troubleshooting. Prerequisites: EET 276 and EET 277 with a minimum grade of “C” or consent of Electrical Technology program advisor(s). Corequisite: EET 286.

EET 298 Practicum (1-8)
The Practicum provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Practicum do not receive compensation. (This course may be taken for 1-8 credits.)

EET 299 Cooperative Education Program (1-8)
Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work. (This course may be taken for 1-8 credits.) Prerequisite: Consent of instructor

ENC 090 Foundations of College Writing I (3)
An introduction to composition for students needing basic writing instruction and a comprehensive review of mechanics and grammar as these apply to their own writing. This course stresses clarity, organization, development, and correctness in writing with an emphasis on paragraph length assignments. Students will be recommended to this course based on the placement examination.

ENC 091 Foundations of College Writing II (3)
Designed for students with some writing experience, this course includes instruction in the following: the writing process, organization, multiparagraph writings, editorial improvement, and critical reading. An introduction to research and documentation is also included. Students will be recommended to this course based on the placement examination.

ENC 092 Writing Laboratory (1)
The writing laboratory may supplement the concurrent composition course. It is designed to provide individual assistance in meeting students’ specific writing needs. This course can be repeated with each writing course taken. Pass/Fail only.

ENC 099 Writing Lab for English 101 ESL Students (3)
The writing lab will supplement the ENG101 writing/grammar course. It is designed to provide more time to meet the grammar/writing needs of ESL students. Prerequisites: ENC 097 or assessment placement.

ENG 100 Writing I (3)
Provides parallel and supplemental review of English skills needed for students with an English ACT of 18 or 19 or a Compass placement test score between 70-80 who are also enrolled in ENG 101. If these students withdraw from ENG 100, they must also withdraw from ENG 101. Credit cannot be received by special exam.

ENG 101 Writing I (3)
Focuses on academic writing. Provides instruction in drafting and revising essays that express ideas in Standard English, including reading critically, thinking logically, responding to texts, addressing specific audiences, researching and documenting sources. Includes review of grammar, mechanics, and usage. NOTES (a) credit not
available by special examination; (b) ENG 101 and ENG 102 may not be taken concurrently. Prerequisites: Appropriate writing placement score or ENG 091.

**ENG 102 Writing II (3)**
Emphasizes argumentative writing. Provides further instruction in drafting and systematically revising essays that express ideas in Standard English. Includes continued instruction and practice in reading critically, thinking logically, responding to texts, addressing specific audiences, and researching and documenting credible academic sources. NOTE: Credit not available by special examination. Prerequisite: ENG 101.

**ENG 105 Writing an Accelerated Course (3)**
An intensive course in writing that combines the content of ENG 101 and ENG 102, emphasizing argumentation and library research. ENG 105 satisfies the University Writing Requirement for students who qualify for admission by ACT score and special examination. NOTE: Credit for this course and for fulfillment of the University Writing Requirement possible by CLEP examination.

**ENG 161 Introduction to Literature (3)**
An analytical rather than historical approach to literature intended to deepen the student's insight into the nature and purpose of literature.

**ENG 203 Business Writing (3)**
Instruction and experience in writing for business, industry, and government. Emphasis on clarity, conciseness, and effectiveness in preparing letters, memos, and reports for specific audiences. Prerequisite: Completion of University Writing requirement.

**ENG 207 Beginning Workshop in Imaginative Writing (Subtitle required) (3)**
A beginning course in the craft of writing, teaching students how to read critically and how to revise work in progress. The students provide an audience for each other's work. Exercises involve practice in aspects of craft and promote experimentation with different forms, subjects, and approaches; outside reading provides models and inspiration. May be repeated under different subtitle to a maximum of six credits. Prerequisite: Consent of instructor.

**ENG 231 Literature and Genre (3)**
A course exploring one or two different literary forms or genres, i.e. the formal categories into which literary works are placed. Students will explore the conventions of each genre and their related sub-genres. Attention will be paid to student writing.

**ENG 232 Literature and Place (3)**
A course exploring a number of selected literary texts, with special attention to the construction of personal, ethnic, racial, or national identity. The course may consider how race, class, sexuality, and/or nationality influence representations of experience. Attention will be paid to student writing.

**ENG 233 Literature and Identities (3)**
A course exploring a number of selected literary texts, with special attention to the construction of personal, ethnic, racial, or national identity. The course may consider how race, class, sexuality, and/or nationality influence representations of experience. Attention will be paid to student writing.

**ENG 234 Introduction to Women’s Literature (3)**
This course will introduce students to a sampling of the rich body of women’s writing, focusing on some important issues and representative examples. Students will read canonical and non-canonical works, discuss continuities and differences among women writers, and master some of the basic concepts of gender studies.

**ENG 261 Survey of Western Literature from the Greeks through the Renaissance (3)**
A study of works by major Western authors from the Bible and ancient Greek literature through the Renaissance. Note: ENG 261 fulfills no requirement of the English major.

**ENG 262 Survey of Western Literature from 1660 to the Present (3)**
A study of works by major Western authors from mid-17th century to the present. Note: ENG 262 fulfills no requirements of the English major.
ENG 264 Major Black Writers (3)
A cross-cultural and historical approach to written and oral works by major Black authors of Africa, the Caribbean and the United States. The course includes writers such as Chinua Achebe (Africa), Wilson Harris (Caribbean), and Toni Morrison (USA). (Same as AAS 264.)

ENG 281 Introduction to Film (3)
An introduction to the study of the movies as a narrative art and a cultural document. Viewing of films outside of class is required. May not be taken concurrently with ENG 380.

ENG 282 International Film Studies (3)
Enhances student awareness of how cinema has been used as a multicultural tool for observing/analyzing various aspects of a broad range of societies. Includes critical analysis and interpretation of films from various cultures. Explores the films' countries of origin and the cinematic impacts upon the society and the world.

ENG 230 Introduction to Literature (3)
An introduction to close reading and argumentative writing about literature, in relation to a significant theme. The course involves studying selected texts revolving around a single theme, learning how to relate texts to contexts, to read closely and use basic literary terms and concepts. Attention will be paid to student writing, particularly to devising a thesis, crafting an argument, and learning how to use supporting evidence.

ENGT 110 Circuits I (5)
Introduces application of basic DC and AC circuits, including circuit analysis techniques. Discusses introductory magnetism and transformer principles. Emphasizes design, construction, and troubleshooting of simple DC and AC circuits in laboratory exercises. Prerequisite: 065 or equivalent placement level or Consent of Instructor.

Sub-Categories of ENGT 110

ENG 1101 Basic Electricity (1)
This module of ENGT110 is an introduction to basic DC circuits, specifically safety, basic test equipment, electrical resistance and Ohm’s law.

ENG 1102 Series and Parallel Circuits (1)
This module of ENGT110 is an introduction to basic DC circuits, specifically series and parallel circuits. Emphasizes design, construction, and troubleshooting of simple DC circuits in laboratory exercises.

ENG 1103 Introductory Circuit Analysis (1)
This module of ENGT110 is an introduction to basic DC circuits, specifically circuit analysis techniques. Emphasizes design, construction, and troubleshooting of simple DC circuits in laboratory exercises.

ENG 1104 Magnetism and Alternating Current (1)
This module of ENGT110 is an introduction to basic AC circuits, specifically introductory magnetism and basic AC theory. Emphasizes design, construction, and troubleshooting of simple AC circuits in laboratory exercises.

ENG 1105 Capacitance and Inductance (1)
This module of ENGT110 is an introduction to basic AC circuits, specifically capacitance, inductance and transformer principles. Emphasizes design, construction, and troubleshooting of simple AC circuits in laboratory exercises.

ENG 114 Circuits II (5)
Addresses theory and application of complex alternating current and direct current circuits. Emphasizes impedance, reactance, power and electrical energy, electrical measurement instruments, and circuit analysis. Prerequisite: ENGT 110 with a grade of "C" or greater or Consent of Instructor.
Sub-Categories of ENGT 114

ENGT 1141 Circuit Analysis (1)
This module of ENGT114 addresses theory and application of complex alternating current and direct current circuits. Specifically, this course reviews AC basics, Inductive and Capacitive Reactance.

ENGT 1142 Complex Circuit Analysis (1)
This module of ENGT114 addresses theory and application of complex alternating current and direct current circuits. Specifically, this course emphasizes circuit analysis using Thevenin, Norton, superposition, Branch, Node and Mesh analysis.

ENGT 1143 RC, RL and RLC Circuits (1)
This module of ENGT114 addresses theory and application of complex alternating current and direct current circuits. Specifically, this course emphasizes impedance, reactance, power and electrical energy.

ENGT 1144 Resonance and Filters (1)
This module of ENGT114 addresses theory and application of complex alternating current and direct current circuits. Specifically, this course emphasizes resonance and filters.

ENGT 1145 Phase Circuits (1)
This module of ENGT114 addresses theory and application of complex alternating current and direct current circuits. Specifically, this course emphasizes 3-phase circuits.

ENGT 120 Digital I (3)
Introduces theory and application of digital logic methods. Includes Boolean algebra, combinational logic theory, sequential circuits, number systems and codes, and design and troubleshooting of digital logic circuits. Prerequisite: 065 or equivalent placement level or Consent of Instructor.

Sub-Categories of ENGT 120

ENGT 1201 Digital Basics (1)
This module of ENGT120 is an introduction to basic digital circuits, specifically number systems and input output functions of gates and circuits.

ENGT 1202 Logic Circuit Design (1)
This module of ENGT120 is an introduction to design methods for basic digital circuits.

ENGT 1203 Logic Circuit Components and Troubleshooting (1)
This module of ENGT120 covers construction, troubleshooting and testing of logic circuits.

ENGT 210 Devices I (5)
Provides basic theory and application of semi-conductor devices. Emphasizes design, construction and troubleshooting of diode and transistor circuits, amplifiers and power supplies. Prerequisites: ENGT 110 with a grade of "C" or greater or Consent of Instructor.

Sub-Categories of ENGT 210

ENGT 2101 Semiconductor Basics (0.2)
This module of ENGT 210 covers Devices, specifically basic semiconductor theory.

ENGT 2102 Diode Circuits and Power Supplies (1.75)
This module of ENGT 210 covers Devices, specifically: diodes, zener diodes, basic diode circuits, and power supplies.

ENGT 2103 Transistors and Amplifiers (1.75)
This module of ENGT 210 covers Devices, specifically: transistors, amplifiers and their characteristics, amplifier classes, and modeling of active devices.

**ENGT 2104 Design of Electronic Circuits (1.3)**
This module of ENGT 210 covers Devices, specifically: design, modify, and troubleshoot prototype circuits.

**ENGT 214 Devices II (5)**
Covers theory and application of advanced semiconductor devices. Emphasizes thyristors, FETs, integrated circuits, and other devices as applied to audio frequency amplifiers, feedback circuits, modulators, detectors, and other basic electronic circuits. Prerequisites: ENGT 210 with a grade of "C" or greater or Consent of Instructor.

*Sub-Categories of ENGT 214*

- **ENGT 2141 Thyristors (0.4)**
  This module of ENGT 214 covers Devices, specifically thyristor circuits.

- **ENGT 2142 Op Amps (1.0)**
  This module of ENGT 214 covers Devices, specifically op amp circuits and feedback.

- **ENGT 2143 FET Circuits (1.0)**
  This module of ENGT 214 covers Devices, specifically FET and MOSFET circuits.

- **ENGT 2144 Advanced Transistor Amplifier Circuits (0.8)**
  This module of ENGT 214 covers Devices, specifically single and multi-stage transistor amplifier circuits.

- **ENGT 2145 Power Supply Regulator Circuits (0.8)**
  This module of ENGT 214 covers Devices, specifically power supply regulator circuits.

- **ENGT 2146 Oscillators (1.0)**
  This module of ENGT 214 covers Devices, specifically oscillators.

**ENGT 220 Digital II (3)**
Provides theory and application of advanced digital logic methods. Includes small and medium scale integrated circuits logic families, interfacing techniques, arithmetic circuitry, programmable devices, and an introduction to microprocessors. Prerequisites: ENGT 120 with a grade of "C" or greater or Consent of Instructor.

*Sub-Categories of ENGT 220*

- **ENGT 2201 Medium scale integrated circuits (0.8)**
  This module of ENGT 220 covers Digital Circuits, specifically medium scale integrated circuits such as counters, simple ALUs, and registers.

- **ENGT 2202 Interfacing of digital circuits (0.5)**
  This module of ENGT 220 covers Digital Circuits, specifically common interfacing techniques used with digital circuits.

- **ENGT 2203 Logic families (0.2)**
  This module of ENGT 220 covers Digital Circuits, specifically the different logic families.

- **ENGT 2204 Programmable devices (0.7)**
  This module of ENGT 220 covers Digital Circuits, specifically common programmable devices.

- **ENGT 2205 Microprocessors (0.8)**
  This module of ENGT 220 covers Digital Circuits, specifically microprocessors and basic programming.
ENGT 250 Communications Electronics (6)
Provides the theory of AM and FM, RF communications, transmission, reception, multiplexing, and modern data communications. Prerequisites: (ENGT 220 and ENGT 214) or Consent of Instructor.

ENM 100 Introduction to Energy Management (4)
Examines the most critical areas of effective energy cost reductions providing the latest strategies for improving building resource needs. Topics include distributed generation, energy auditing, rate structures, economic evaluation techniques, lighting efficiency improvements, HVAC optimization, insulation cost effective measures, control systems, energy systems maintenance, and renewable energy.

ENM 110 Energy Conservation Code (3)
Provides the rationale and benefits of the current energy conservation code adopted by the Commonwealth of Kentucky for residential and commercial buildings. The course addresses the design of energy-efficient building envelopes and installation of energy efficient systems resulting in optimal utilization of energy resources. Appropriate energy management compliance software will be utilized.

ENM 120 Residential Energy Analysis (3)
Examines ways to improve the energy efficiency of a residential building. The course emphasizes the building envelope, lighting, HVAC, motors, appliances, water and electrical system with a focus on the owner’s energy management system. For energy savings and reductions in operational expenses appropriate residential energy compliance software and residential energy ratings will be used.

ENM 124 Commercial Energy Analysis (3)
Examines ways to improve the energy efficiency of a commercial building. The course emphasizes the building envelope, lighting, HVAC, motors, appliances, water and electrical systems and their controls with a focus on an energy management system. For energy savings and reductions in operational expenses, commercial energy compliance software will be used.

ENM 130 Sustainable Energy (3)
Examines the sustainability of various energy resources. An overview of energy technology, energy resources, and emerging future energy technologies coupled with our energy use will bring into context the strengths and weaknesses of different energy methodologies in developing a working concept of sustainable energy.

ENM 140 Renewable Energy Systems (3)
Examines the need for alternative and renewable energy resources as a survey course providing citizens from all walks of life an understanding for responsible stewardships of technologies that will contribute to the sustainability of energy in our present and future societies.

ENM 150 Solar Design and Applications (3)
Examines active and passive solar energy designs and applications. Solar water heating for domestic use, solar air systems, new and retrofit solar home designs, and solar photovoltaic applications will be explored.

ENM 198 Energy Management Practicum (2)
Provides supervised on-the-job work experience related to the student’s educational objectives in energy management related field. Students participating in the Practicum Educational program do not receive compensation for their work.

EQM 100 Introduction to Equine Studies (3)
The intent of this course is to give students a general overview and basic understanding of the horse, its care and management. Course topics include identification, anatomy, health, nutrition, facility and equipment management.

EQM 120 Introduction to Commercial Breeding Practices (4)
The intent of this course is to introduce prospective horse farm personnel to the breeding farm environment.
Numerous topics will be discussed that relate to commercial breeding farm management and the necessary record keeping requirements. Prerequisites: EQM 100 or consent of instructor.

**EQM 140 Equine Business Management I (2)**
Course in equine management that serves to introduce the student to private and commercial horse farm operations, economic trends in the horse industry, international marketplace, capital, credit and risk associated with the equine industry. Prerequisites: EQM 100 and BE 160, or consent of instructor.

**EQM 240 Equine Business Management II (2)**
This course is a continuation of Equine Business Management I. Topics of discussion include types of farm ownership, structure of the horse farm as a business, and evaluation of farm financial performance through production levels, employee management, tax planning, bloodstock value, cash flow and budgeting. Prerequisites: EQM 140 and concurrent enrollment in or successful completion of ACC 201 and ECO 201, or consent of instructor.

**EQM 242 Equine Law (3)**
This course explores the value of legal documents as they relate to commercial and recreational horse/horse farm owners. Topics discussed include review of current legislation governing horse activities, types of legal contracts, liability issues, and security interests. Prerequisites: EQM 100 and BE 267, or consent of instructor.

**EQM 246 Current Trends in the Equine Industry (1)**
Seminar course in the horse industry designed to provide students with the opportunity to investigate, evaluate and debate key issues confronting horse owners and horse industry participants. Students are encouraged to analyze controversial circumstances in the equine industry and provide insight and logical conclusion. Seminar topics may include such issues as equine adoption, slaughter, transport, medications, account wagering, and public image. Prerequisites: EQM 242 or consent of instructor.

**EQM 250 Equine Practicum (3)**
A supervised, field-based learning experience in the equine industry, including observation and proactive participation in affiliated environments. Students are required to analyze their experiences throughout the semester to develop career objectives and strong interpersonal, communication and leadership skills. Prerequisites: EQM 240, EQM 242, and concurrent enrollment in or successful completion of EQM 246.

**EQS 102 Introduction to Racehorse Care (3)**
Introduces principles of care for racehorses in a race barn training environment with students learning industry accepted standards and techniques while providing daily care for 1 or 2 racehorses. Prerequisite: Permission of instructor.

**EQS 103 Racehorse Care II (3)**
Continues the learning experiences of EQS 102 and expands on advanced industry accepted techniques of caring for racehorses in a race barn training environment. Prerequisite: EQS 102.

**EQS 110 Basic Equine Physiology (3)**
Continues the study of equine care begun in EQM 100 examining the anatomy and physiology of equine body systems and applications of this knowledge to the raising, training and management of horses in general and racehorses in particular. Includes identification of three muscle fiber types; types, causes and symptoms of colic; thermoregulation; blood components and flow; upper and lower respiratory airway diseases and infectious neurological diseases. Prerequisites: EQM 100 or permission of instructor. Co-requisite: EQM 100.

**EQS 111 Introduction to Riding Racehorses (1)**
Covers requirements for becoming a licensed professional jockey including physical, mental and emotional components, regulatory agency requirements and necessary life management skills. Includes the history of race riding, identification of important riders in history and noteworthy current riders.

**EQS 112 Racehorse Riding Skills I (3)**
Introduces basic horse riding skills and their application to racehorse riding. Presents and requires daily practice of
proper rider position at walk, trot, canter, on turn and in straights. Includes discussion and round pen applications of center of gravity of horse, center of gravity of rider and center of gravity of the combination of horse and rider. Teaches proper techniques for cooling out after exercise and/or racing. Requires successful admission to jockey school. Prerequisite: Permission of instructor. Co-requisite: EQS 111.

**EQS 113 Racehorse Riding Skills II (3)**
Continues development of riding skills learned in EQS 112 by applying principles to riding racehorses in morning exercise sessions. Includes application of balance to evaluate soundness in racehorses; basic starting gate techniques for riders; principles of teaching young horses to enter and leave the starting gate and techniques for handling unruly horses. Prerequisites: EQS 112 and permission of instructor.

**EQS 121 Introduction to Breaking and Training Racehorses (1)**
Introduces the basic requirements for becoming a licensed racehorse trainer or other equine care worker. Includes historical contributions of prominent owners, breeders, trainers and racehorses that significantly impacted the history of their respective breed. Prerequisite: EQS 100. Co-requisite: EQS 100.

**EQS 122 Yearling Breaking and Management (3)**
Introduces the basics of managing and training weanling and yearling racehorses including conformation, movement, pedigree analysis; pre-purchase examinations and practical application of pressure-release techniques of breaking and training young racehorses. Prerequisites: EQS 121 and permission of instructor.

**EQS 123 Breaking and Prepping Two-Year Olds (3)**
Covers basics of managing racehorses through their yearling to 2-year old transition. Includes acquiring yearlings and/or two-year olds, breaking, prepping for in-training sales and/or racing, concepts of nutrition for growing equine athletes, cardiovascular conditioning, muscle fitness, sale presentation and injuries of two-year olds in race training. Prerequisites: EQS 122 or permission of instructor.

**EQS 130 Introduction to the Racing Industry (3)**
Introduces students to racing industry organizations, personnel, facilities and the rules of racing.

**EQS 200 Lameness in Racehorses (3)**
Expands on basic equine anatomy with emphasis on normal function of front and rear legs and methods of evaluating deviations from normal function presented as lameness in racehorses. Also discusses response to injury, forms of therapy and training methods for horses returning from injury. Prerequisites: EQS 110 or permission of instructor. Co-requisite: Concurrent enrollment in EQS 110.

**EQS 202 Racing Stable Operations I (3)**
Continues the experience of daily caring for a racehorse in training and adds development of a racing stable training routine and participation in the daily exercise and training of racehorses. Prerequisites: EQS 103 and permission of instructor.

**EQS 203 Racing Stable Operations II (3)**
Continues racing stable practices begun in EQS 202 adding additional concepts of managing a racing stable including supervision and instruction of hotwalkers and beginning grooms while participating in daily exercise and training of racehorses. Prerequisites: EQS 202 and permission of instructor.

**EQS 212 Racehorse Riding Principles (3)**
Builds on basic skills learned in EQS 113 and adds principles of riding racehorses on a training track in company of other horses and riders, teaching horses to pass others, working in company, proper use of riding crop and breaking from a starting gate. Prerequisites: EQS 113 and permission of instructor.

**EQS 213 Racehorse Riding Techniques (3)**
Teaches advanced fundamentals of race riding. In this final riding course in the jockey pathway students breeze racehorses alone and in company, learn techniques of riding at each point in a race, get approved to break horses
from a starting gate and practice race riding skills in training races. Prerequisites: EQS 212 and permission of instructor.

**EQS 215 Life Skills for Jockeys (3)**
Prepares student for life as a professional jockey. Includes integration of principles of nutrition into an eating plan that will maintain weight and health. Introduces concepts of practical financial management, insurance and retirement planning on a jockey’s salary. Ties together basic riding skills with interpersonal skills necessary for a successful life as a professional jockey. Prerequisites: EQS 212 and permission of instructor. Co-requisite: EQS 212.

**EQS 222 Training Methods I (3)**
Examines techniques of training racehorses and compares effectiveness of different racehorse training methods including interval training, Quarter Horse training, steeplechase training and standard Thoroughbred training. Includes shoeing, veterinary examinations of racehorses and alternatives to training on a dirt oval. Prerequisites: EQS 123 or permission of instructor.

**EQS 223 Training Principles and Practices (3)**
Builds on training methods learned in EQS 222 and explores current training practices employed in the racing industry. Requires students to develop a training plan for assigned NARA racehorses, supervise first year NARA student “employees,” participate in NARA training races and develop a plan to communicate with owners regarding the status of horses in training. Prerequisites: EQS 222 or permission of instructor.

**EQS 225 Life Skills for Horsemen (3)**
Explores concepts of goal setting, time management, marketing racehorses, marketing racing services, managing personal relationships as an equine professional, communication skills unique to equine professionals plus personal and family health and wellness plans. Prerequisites: EQS 222 and permission of instructor.

**EQS 230 Racing Office Operations (3)**
Teaches concepts of managing a racing office to include writing a condition book, taking entries, carding races, drawing for post position and conducting races. Includes an examination of the national and state laws governing racing and pari-mutuel wagering. Prerequisites: EQS 130 or permission of instructor.

**ESL 010 Introduction to Reading and Vocabulary (4)**
High-beginning level students will improve fundamental reading skills and expand vocabulary as they interact with level-appropriate texts. Students will be recommended to this course based on the ESL placement examination.

**ESL 011 Beginning Listening and Speaking (4)**
High-beginning level students will improve the ability to speak and understand English in simple everyday and academic situations. The course will provide practice in pronunciation and basic oral communication functions. Beginning academic listening and speaking skills will also be covered. Students will be recommended to this course based on the ESL placement examination.

**ESL 012 Intermediate Listening and Speaking (4)**
Low-intermediate level ESL students will improve comprehension and communication in English on a variety of everyday topics and in the academic setting. Students will develop and practice techniques for greater composure and confidence in oral expression. Practice will also be provided in pronunciation and intonation. Students will be recommended to this course based on the ESL placement examination or through completion of ESL 011.

**ESL 013 Advanced Listening and Speaking (4)**
High-intermediate level ESL students will improve comprehension and communication in both social and academic settings. Instruction will include improving listening skills for academic note taking and small group discussion. Students will be expected to lead and share in class discussions based on reading and authentic listening materials. Student will also present orally in front of the class. Students will be recommended to this course based on the ESL placement examination or through completion of ESL 012.

**ESL 020 Reading Improvement and Vocabulary (4)**
Development for Low-Intermediate Non-Native English Speakers Low-intermediate level students will review
fundamental reading skills, learn and practice higher order reading skills, expand vocabulary and increase reading efficiency as they interact with level-appropriate texts. Prerequisite: Placement test.

**ESL 030 College Reading and Vocabulary (4)**
Development for High-Intermediate Non-Native English Speakers High-intermediate level ESL students will master fundamental reading skills, improve critical reading, and further vocabulary development. Students will be introduced to a variety of genres, such as newspaper articles and essays, poems, short stories, charts, graphs and college level content textbooks. Through the selected readings, this course will foster cultural awareness, comprehension, and interaction. The readings and activities introduced in the course will allow students to engage in meaningful dialogue, and in the process, refine their English skills. Prerequisites: ESL 020 or placement test.

**ESL 31 Beginning Conversation for Non-Native English Speakers (3)**
Beginning level ESL students will learn basic conversation and practice basic sounds and intonation patterns.

**ESL 32 Low-Intermediate Conversation Non-Native English Speakers (3)**
Low intermediate level ESL students will continue to acquire basic conversational basic/idiomatic vocabulary and continue to have practice in the pronunciation of basic sounds and intonation patterns. Prerequisite: ESL 031 or placement test.

**ESL 33 High-Intermediate Conversation for Non-Native English Speakers (3)**
High-intermediate level ESL students will acquire the most practical and widely used American idioms and verbal phrases. In addition, students will become more familiar with North American Culture and will be able to prevent cultural misunderstandings. Non-native English speakers will continue to improve reading, listening comprehension and pronunciation skills. Prerequisite: ESL 032 or placement test.

**ESL 41 Beginning Vocabulary for Non-Native English Speakers (3)**
Beginning-level ESL students will learn new vocabulary systematically, through presentation and practice of terms grouped in lexical sets, and will develop a problem-solving approach to vocabulary learning. 3 credit hours

**ESL 42 Low-Intermediate Vocabulary Non-Native English Speakers (3)**
Low-Intermediate level ESL students continue to learn new vocabulary pertaining to a wide range of contexts. Systematic approach to vocabulary learning is applied: grammatical knowledge and sensitivity to collocations and usage are incorporated. Prerequisite: ESL 041 or placement test.

**ESL 51 Introduction to College Reading for Non-Native English Speakers (3)**
Beginning-level students will acquire or strengthen fundamental reading skills and expand vocabulary as they interact with level-appropriate texts.

**ESL 52 Improved College Reading for Low-Intermediate Non-native English Speakers (3)**
Intermediate-level students will review fundamental reading skills, learn and practice higher order reading skills, expand vocabulary and increase reading efficiency as they interact with level-appropriate texts. Prerequisite: ESL 051.

**ESL 53 High-Intermediate Reading for Non-Native English Speakers (3)**
High-intermediate level ESL students will master fundamental reading skills. They will be introduced to a variety of genres, such as newspaper articles and essays, poems, short stories, charts, graphs and many other. In addition, this course will foster cultural awareness, understanding and interaction. Through the readings and activities introduced in the course students will engage in meaningful dialogue, and in the process, refine their English skills. Prerequisite: ESL 052 or placement test.

**ESL 61 Foundations of College Writing I for Non-Native English Speakers (4)**
Beginning level ESL students are introduced to composition with an emphasis on clarity, organization, development and correctness. Comprehensive review of mechanics, grammar and spelling as these apply to their own writing is also addressed in this course.

**ESL 63 - Foundations of College Writing III for Non-Native English Speakers (4)**
ESL 063 is designed to help students prepare for ENG 101. High-intermediate level ESL students continue to work on the writing process, editorial improvement and critical reading. Grammar instruction includes advanced
grammatical points, such as modal auxiliaries, gerunds, infinitives, adjective and noun clauses. Prerequisite: ESL 062 or placement test.

**ESL 090 Beginning Writing (4)**
High-beginning level ESL students will learn composition skills by receiving instruction in the following: the writing process, organization, sentence development, paragraph writing, and editing. Basic instruction in grammar provided. Students will be recommended to this course based on the ESL placement examination.

**ESL 091 Intermediate Writing for Non-Native English Speakers (4)**
Low-intermediate level ESL students will enhance their composition skills by receiving instruction in the following: the writing process, organization, multi-paragraph writings, editing, and critical reading. Basic instruction in grammar provided. Prerequisite: Placement test.

**ESL 092 Advanced Writing for Non-Native English Speakers (4)**
ESL 092 is designed to help students prepare for ENG 101. High intermediate level ESL students continue to work on the writing process, editorial improvement, and critical reading. Students will be introduced to documenting sources. Grammar instruction includes advanced grammatical points. Prerequisites: ESL 091 or placement test.

**EST 150 Introductory Ecology (4)**
This course introduces the students to the basic concepts in ecology and application of those concepts to current environmental issues. Topics include: the relationships between organisms and the environment; factors that influence the relationships between organisms and the environment; factors that influence distribution and abundance of organisms; population structure and regulation; energy flow, nutrient cycling, and community development, structure, and response to disturbance. A weekly 2 hour laboratory will provide field and laboratory experiences for the students. Prerequisites: BIO 112 and BIO 113 or equivalent.

**EST 160 Hydrological Geology (3)**
This course provides an introduction to geology and hydrology with an emphasis on understanding natural processes and the effects of human activities. Major topics covered include: plate tectonics; formation and classification of rocks and minerals; the processes affecting the hydrologic cycle; soil formation and classification; subsurface geology and groundwater movement; stream formation and flow; floods; and human impacts to stream hydrology and morphology.

**EST 170 Environmental Sampling Laboratory (2)**
A laboratory course which provides the fundamentals in evaluating and designing sampling approaches for different situations and different media. The course will provide students with field experience in sampling soil, surface water, groundwater, and benthic invertebrates. Prerequisites: EST 150 or consent of instructor.

**EST 220 Pollution of Aquatic Ecosystems (3)**
This course examines freshwater ecosystems and typical aquatic pollutants. Discussion topics focus on the sources, transport, fate, and effects of common pollutants such as domestic wastewater, metals, acidity, and pesticides. Methods to minimize or eliminate the sources and effects of pollutants are also explored. Prerequisite or concurrent: EST 150, EST 160, CHE 105, and CHM 105 or consent of instructor.

**EST 225 Freshwater Invertebrates (3)**
An overview of the morphology, life history and ecology of freshwater invertebrates and their habitats as well as their importance and role in stream protection and restoration. Students will learn how to collect, preserve and identify freshwater invertebrates. Students will learn how to calculate and analyze biometrics used to infer stream quality. Prerequisite: EST 150.

**EST 230 Aquatic Chemistry Laboratory (2)**
This course provides focused study on the chemistry of water. The course will provide students with laboratory experience in analyzing surface, ground, and drinking waters for a variety of chemical constituents. Prerequisites: CHE 105, CHM 105, and prerequisite or concurrent EST 220.
EST 240 Sources and Effects of Air Pollution (4)
This course provides an introduction to the study of ambient and indoor air pollution with an emphasis on sources, dispersion, and health and welfare effects of the major pollutants. Both regulatory and engineering controls of stationary and mobile sources are explored. A laboratory provides experience with sampling and analysis of air pollutants. Prerequisites: EST 150 and CIT 130, or equivalent, or consent of instructor.

EST 250 Solid and Hazardous Waste Management (3)
This course examines methods of managing solid and hazardous waste, with an emphasis on pollution prevention. Topics covered include relevant legislation, recycling, incineration, landfill operations, management of radioactive waste, remediation of waste sites and site worker health and safety. Prerequisites: EST 150 and EST 160, or consent of instructor.

EST 260 Environmental Analysis Laboratory (2)
This course provides an introduction to the fundamentals of analyzing environmental media. The course will provide students with laboratory experience in analyzing soil, surface water, groundwater, air and microbial samples. Prerequisites: CHE 105, CHM 105 and prerequisite or concurrent EST 170.

EST 270 Environmental Law and Regulation (3)
This course is structured to provide the student with a basic understanding of major current federal and state environmental legislation and regulation with an emphasis on those portions that affect the regulated community. The course will also include an examination of the role of common law and the branches of government in environmental protection. Prerequisites or concurrent: EST 220, EST 240, and EST 250 or consent of instructor.

EST 280 Environmental Trends Seminar (1)
This course provides an examination of current approaches used to address a variety of environmental problems. Students will hear and critique presentations from professionals in the environmental field. Students will also research and give a presentation on a specific method to minimize or eliminate a current environmental problem. Prerequisites or concurrent: EST 160, EST 150, COM 181 or COM 252, EST 170, EST 220, EST 260, and EST 250 or consent of instructor.

EST 299 Selected Topics in Environmental Science Technology: (Topic) (1-3)
A special project or experience in Environmental Science will be selected to enhance core material in the Environmental Science Technology program. It provides the student an opportunity for independent study or specialized instruction as approved by an instructor. This course may be repeated to a maximum of 6 hours. Prerequisite: Consent of instructor.

ET 232 Computer Software Maintenance (3)
Includes maintenance of the personal computer with an emphasis on installation, upgrading, and configuration of the operating system. Covers memory management, boot sequences, printing subsystem, application software, and networking with troubleshooting as a main focal point including viruses. When combined with ET 234, this course will help prepare students to take CompTIA A+ certification tests. Prerequisites: [(Computer literacy course or demonstrate competency) and ET 234] or consent of instructor.

ET 234 Computer Hardware Maintenance (3)
Includes maintenance of the personal computer with an emphasis on installation, upgrading, and configuration of computer hardware. Covers network and Internet access, internal addressing, architecture, interrupts, complete PC construction and basic troubleshooting. When combined with ET 232, this course will help prepare students to take CompTIA A+ certification tests. Prerequisites: Computer literacy course or IC3 or consent of instructor.

ETT 101 Survey of Electricity (4)
This course is a one-semester overview of industrial electricity for students majoring in areas other than electricity. Topics include: AC and DC circuits, safety, transformers, generators, motors, electronic circuits, three phase, grounding, and industrial controls.

ETT 110 Voice & Data Installer Level I (4)
A comprehensive orientation to the telecommunication industry. Provides entry-level telecommunications cabling
installers with the background, knowledge, and basic skills needed to function effectively on the job. Designed for those with little or no telecommunication installation experience. Prerequisites: Basic physics/electricity courses are recommended but not required.

**ETT 112 Basic Electrical Theory: Telenetworking (3)**
Introduces the theory of electricity, magnetism, and the relationship of voltage, current, resistance, and power in electrical circuits as related to telecommunications. Designed to develop an understanding of alternating and direct current fundamentals. Students will apply formulas to analyze the operation of AC and DC circuits.

**ETT 113 Basic Electrical Theory Lab (1)**
Allows the student to do hands-on applications of the theories and fundamentals learned in ETT 112. Co-requisite: ETT 112.

**ETT 114 Voice & Data Installer Level II (4)**
Designed for experienced telecommunications installers who wish to expand knowledge of the industry, learn new skills, and continue to advance professionally. The Installer Level 2 course requires two to five years of recent, verifiable telecommunications/low voltage cabling experience. In addition, several sections from the Installer Level 1 course will be covered comprehensively in this course. Prerequisite: ETT 110 with a grade of C or greater.

**ETT 116 Fiber Optics Systems (3)**
Provides a technical level of understanding in the areas of networking connectivity, data communications concepts and communication protocols. Communications and networking concepts including hardware, software, and transmission media; access methods and protocols; and network configurations area are addressed. Emphasis is on local area networks, and students will install a basic network. Prerequisites: ETT 110 or Consent of instructor.

**ETT 118 Residential Network Wiring (3)**
Provides students with the knowledge to design and install multimedia applications for residential structures; gain an understanding of industry-standards practices, codes, and ordinances that pertain to high-performance in-home systems. Includes voice, data, security, video, audio, automation, control and entertainment systems, cable performance characteristics, and appropriate cabling media, connectors, blocks, jacks, panel, pathways and spaces. Prerequisites: ETT 110 or Consent of instructor.

**ETT 120 Project Management (3)**
Addresses project management issues including client integration, subcontractor liaison, scheduling, organization, methodologies, status reporting, quality control and safety. Contractual obligations, legal implications, terms and conditions and other associated risks encountered on large or complex projects are also examined.

**ETT 122 Voice & Data Installer Technician (3)**
The most advanced phase of a telecommunication cabling installation training program. Designed for those individuals with five (5) or more years of recent verifiable telecommunications/low voltage cabling experience. Prerequisite: ETT 114 with a grade of C or greater.

**ETT 123 Voice & Data Installer Technician Lab (2)**
Permits hands-on applications of the theories and fundamentals learned in ETT 122. Co-requisite: ETT 122.

**ETT 126 Essentials of Audio Visual Technology (4)**
This course provides a brief overview of the sales, rental, design, and installation functions, with more in-depth explanations of the science and technology for basic audio, visual, and audiovisual systems integration. Completion on this course is recommended for those seeking the general Certified Technology Specialist (CTS) designation. Prerequisites: ET 110 or consent of instructor. Co-requisites: MT 150 or consent of instructor.

**ETT 199 Cooperative Education for Voice and Data Wiring Technician (3)**
Provides supervised on-the-job work experience related to the student’s education objectives. Students participating in the Cooperative Education program receive compensation for their work. Prerequisite: ETT 114 with a grade of C or greater.
EX 196 Experiential Education (1-6)
Experiential Education is a planned and evaluated work experience for which the student receives academic credit and may or may not receive financial remuneration. The work experience may be related to the student’s major or exploratory in nature. One credit will be awarded for each 40 hours of completed work experience. The course may be repeated for a maximum of 6 credits and is available on a pass/fail basis only. This course is open to students in programs other than the Associate in Applied Science majors plus those exploring alternate career paths or making special requests in addition to transfer, non-degree, and pre-baccalaureate students. Prerequisites: Consent of instructor and a completed learning agreement that has been signed by the student, the instructor, and the coordinator.

FAM 252 Introduction to Family Science (3)
Introduction to the scientific study of the family. Topics covered will include the important theoretical frameworks in family science, historical trends in marriage and family life, gender role theory, family life cycle theory, parenthood, communication, economics of family life, conflict, divorce, step-families and step-parenting, family strengths. Students will analyze contemporary family issues and take informed, written positions on those issues.

FAM 253 Human Sexuality: Development, Behavior and Attitudes (3)
Study of human sexuality, including the process of gender differentiation, sexual response patterns, sexual behavior and attitudes. Prerequisite: Three hours in social or behavioral sciences.

FAM 255 Child Development (3)
An overview of the various aspects of development (physical, social, emotional, intellectual) in the social context for children prenatally through adolescence. Course will emphasize techniques of directed observation.

FLM 110 Filmmaking: Treatment to Storyboard (4)
This course offers project-based instruction on the basics of filmmaking. Through lecture and hands-on activities, the student will be familiar with creating a film treatment and proposal, writing and revising a screenplay and creating and managing a storyboard. FLM 110 is part of the Certificate in Filmmaking: Script to Screen.

FLM 120 Filmmaking: Storyboard through Production (4)
This course offers project-based instruction on the basics of filmmaking. Through lecture and hands-on activities, such as directing a scene, lighting a scene, the student will be familiar with techniques involved in directing, set designing, cinematography, lighting, and audio as applied to film production. FLM 120 is part of the Certificate in Filmmaking: Script to Screen. Prerequisite: FLM 110.

FLM 130 Filmmaking: Editing through Distribution (4)
This course offers hands-on experience in elements of filmmaking including graphic design, editing, music production and promotion. Emphasis is on preparation for entry level positions in the industry. FLM 130 is part of the Certificate in Filmmaking: Script to Screen. Prerequisite: FLM 120.

FPX 100 Fluid Power (3)
This course is a study of fluid power theory, component identification and application, schematic reading, and basic calculations related to pneumatic and hydraulic systems and their operations. Co-requisite: FPX 101

Sub-Categories of FPX 100

FPX 1001 Basic Hydraulics (1)
Introduces students to the basic concepts of basic fluid power, fluid power systems, and how they apply to industrial applications.

FPX 1002 Intermediate Hydraulics (1)
Introduces students to the basic concepts of basic fluid power, fluid power systems, and how they apply to industrial applications.

FPX 1003 Basic Pneumatics (1)
Introduces students to the basic concepts of basic pneumatics, fluid power systems, and how they apply to industrial applications.
FPX 101 Fluid Power Lab (2)
Provides practical experiences in the study of fluid power theory, hydraulics and pneumatics component identification, schematic reading, and basic calculations related to hydraulic and pneumatic systems and their operations. Co-requisite: FPX 100 or Consent of Instructor.

Sub-Categories of FPX 101

FPX 1011 Basic Hydraulics Lab (0.5)
Introduces students to the basic concepts of basic fluid power, fluid power systems, and how they apply to industrial applications.

FPX 1012 Intermediate Hydraulics Lab (1)
Introduces students to the basic concepts of basic fluid power, fluid power systems, and how they apply to industrial applications.

FPX 1013 Basic Pneumatics Lab (0.5)
Introduces students to the basic concepts of basic pneumatics, fluid power systems, and how they apply to industrial applications.

FR 101 Elementary French (4)
The study of basic French through grammar, reading and oral practice.

FR 102 Elementary French (4)
A continuation of FR 101. The study of basic French through grammar, reading and oral practice. Prerequisite: FR 101.

FRS 101 Introduction to Fire Service (3)
This course includes fire department organization, fire behavior, firefighter safety, personal protective equipment, portable fire extinguishers, fire hose, appliance and streams.

FRS 102 Firefighters Basic Skills I (3)
This course includes ropes, ladders, aircraft rescue, forcible entry, first aid, blood borne pathogens, and emergency disaster planning, and CPR.

FRS 103 Firefighters Basic Skills II (3)
This course includes building construction, wild land fire fighting, fire control and ventilation.

FRS 104 Firefighters Intermediate Skills I (3)
This course includes water supply, foam fire streams, fire alarms and communications, hazardous materials awareness, hazardous materials operations, sprinklers, and salvage and overhaul.

FRS 105 Firefighters Intermediate Skills II (3)
This course includes fire department organization, fire behavior, personal protective equipment, fire hose, appliances and streams, ropes, forcible entry.

FRS 201 Firefighters Advanced Skills I (3)
Firefighters Advanced Skills I includes firefighter safety, rescue, ventilation, ladders, fire control, and emergency disaster planning.

FRS 202 Firefighters Advanced Skills II (3)
Firefighters Advanced Skills II includes portable fire extinguishers, water supply, pump operations, foam fire streams, salvage, fire prevention, public education, and fire cause determination.
FRS 203 Firefighters Advanced Skills III (3)
Firefighters Advanced Skills III includes pump operations II, drivers training, overhaul, fire alarms and communications, sprinklers, and practicum.

FRS 204 EMT First Responder (3)
EMT First Responder includes first responder (EMS).

FRS 205 Fire Officer I (5)
Fire Officer I includes incident safety Officer, haz-mat tech., fire prevention, public education and fire cause determination II.

FRS 206 Fire Officer II (8)
Fire Officer II includes EMT, managing company tactical operations, decision making, and instructional techniques for company officers.

FRS 207 Fire Officer III (6)
Fire Officer III includes company officer, incident command system (ICS), leadership strategies for company success, and fire/arson detection.

FRT 152 Fire Prevention, Public Education and Fire Cause Determination II (0.5)
Relates to prefire planning, fire incident reports, building fire safety surveys, school exit drills, home safety programs, common fire hazards, fire cause determination, protection and detection systems and identification of structural deficiencies that could cause fires. Prerequisites: FRT 100-126, or consent of instructor.

FRT 153 Firefighter Survival & Rescue (1.1)
This course examines significant areas of firefighter fatalities and injuries associated with emergency and nonemergency situations. This course addresses causes of fatalities and injuries and recommended solutions and methods to implement the latter.

FRT 154 Hazardous Materials Technician (3.4)
This course provides the required training for Federal Occupational Safety and Health Administration (OSHA), Kentucky Occupations Health and Safety regulation and U.S. Environmental Protection Agency (EPA) requirements. The course will cover responding to releases or potential releases of hazardous materials for the purpose of controlling the release and using specialized chemical-protective clothing and specialized control equipment. Prerequisites: FRT 100-151 or consent of instructor.

FRT 155 Emergency Medical Technician (EMT) (6)
This basic Emergency Medical Technician course covers all knowledge aspects of trauma care as outlined by national standards, created by federal guidelines, considered to be the responsibilities of ambulance operations. Training involves typical anatomy and physiology; patient assessment; care for respiratory and cardiac emergencies, control of bleeding; application of dressing and bandages; treatment for traumatic shock; care for fractures, dislocation, sprains and strains; medical emergencies; emergency childbirth; burns and heat emergencies; environmental emergencies; principles of vehicle rescue; transportation of patients and general operations of ambulance systems. Prerequisites: FRT 100-151 or consent of instructor.

FRT 156 Managing Company Operations: Decision Making (1)
This course is designed to meet the needs of fire officers and crew leaders with responsibilities to manage the operations of one or more companies in structural firefighting operations. The course components of this curriculum include preparation for response, decision making, and tactical operations. The foundation of the course is an extensive use of simulation to provide application of concepts and the development of skills. Managing Company Tactical Operations: Decision making provides an effective approach to command decision making and organization. The focus is a review of the command sequence and an overview of incident command for structural firefighting. Prerequisites: FRT 100-151 or consent of instructor.

FRT 157 Instructional Techniques for Company Officers (1)
Designed for company officers and other fire or rescue service personnel with the responsibility for conducting periodic company level or small unit training. Instructional Techniques for Company Officers introduces the participant to basic instructional concepts and techniques. Course emphasis is on those teaching principles and techniques applicable to fire and rescue service training. Topics include: effective communication, teaching from lesson plans, methods of instruction with emphasis on skills training, and adult learning. Prerequisites: FRT 100-151 or consent of instructor.

FRT 158 Company Officer (3.5)
This course involves information and activities needed to meet the minimum standards of Fire Service Company Officers in practicing competencies relative to administrative and incident resolution consistent with National Fire Protection Association Code 1021. Prerequisites: FRT 100-151 or consent of instructor. Co-requisites: FRT 159, FRT 160, FRT 161.

FRT 159 Incident Command System (ICS) (0.9)
This course is designed to meet the needs of fire officers and managers with responsibilities to use, deploy, implement and/or function within a departmental Emergency Management System. This program addresses the need for incident management systems, an overview of the structure and expandability of ICS, an understanding of the command skills needed by departmental officers to effectively use ICS, guidelines and scenario practice on how to apply ICS, and guidelines and resource information for setting up and implementing a departmental ICS. Prerequisites: FRT 100-151 or consent of instructor. Co-requisites: FRT 158, FRT 160, FRT 161.

FRT 160 Leadership: Strategies for Company Success (0.8)
Designed to meet the needs of the company officer, this course provides the participant with basic skills and tools needed to perform effectively as a leader in the fire service environment. This leadership course addresses techniques and approaches to problem-solving, identifying and assessing the needs of the company officer’s subordinates, running meetings effectively in the fire service environment, and decision-making for the company officer. Prerequisites: FRT 100-151 or consent of instructor. Co-requisites: FRT 158, FRT 159, FRT 161.

FRT 161 Fire/Arson Detection (0.8)
The Fire/Arson Detection course is designed for fire officers and firefighters to improve their skills in determining fire causes at the fire scene. The course begins with the study of the motivation of the arsonist and progresses through to the prosecution of the crime of arson. The goal of the course is to provide appropriate training to the firefighter and fire officer so as to make an impact in reducing arson crimes throughout the nation. Prerequisites: FRT 100-151 or consent of instructor. Co-requisites: FRT 158, FRT 159, FRT 160.