Academic Programs
Course Descriptions

ACADEMIC RELATED

ACA 115  Success and Study Skills  0 2 0 0 1
This course provides an orientation to the campus resources and academic skills necessary to achieve educational objectives. Emphasis is placed on exploration of facilities and services, study skills, library skills, self-assessment, wellness, goal-setting, and critical thinking. Upon completion, students should be able to manage their learning experiences to successfully meet educational goals. This course will include topics such as learning style, online readiness, and personality types.

ACA 122  College Transfer Success  1 0 0 0 1
This course provides information and strategies necessary to develop clear academic and professional goals beyond the community college experience. Topics include the CAA, college culture, career exploration, gathering information on senior institutions, strategic planning, critical thinking, and communications skills for a successful academic transition. Upon completion, students should be able to develop an academic plan to transition successfully to senior institutions. Note: At this time ACA 122 is offered only to students enrolled in the College through Career and College Promise.

ACCOUNTING

ACC 120  Principles of Financial Accounting  3 2 0 0 4
Prerequisites: ACC 120
This course introduces business decision-making accounting information systems. Emphasis is placed on analyzing, summarizing, reporting, and interpreting financial information. Upon completion, students should be able to prepare financial statements, understand the role of financial information in decision-making and address ethical considerations. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

ACC 121  Principles of Managerial Accounting  3 2 0 0 4
Prerequisites: ACC 120
This course includes a greater emphasis on managerial and cost accounting skills. Emphasis is placed on managerial accounting concepts for external and internal analysis, reporting and decision-making. Upon completion, students should be able to analyze and interpret transactions relating to managerial concepts including product-costing systems. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

ACC 122  Principles of Financial Accounting II  3 0 0 0 3
Prerequisites: ACC 120
This course provides additional instruction in the financial accounting concepts and procedures introduced in ACC 120. Emphasis is placed on the analysis of specific balance sheet accounts, with in-depth instruction of the accounting principles applied to these accounts. Upon completion, students should be able to analyze data, prepare journal entries, and prepare reports in compliance with generally accepted accounting principles.

ACC 129  Individual Income Taxes  2 2 0 0 3
This course introduces the relevant laws governing individual income taxation. Topics include tax law, electronic research and methodologies, and the use of technology for preparation of individual tax returns. Upon completion, students should be able to analyze basic tax scenarios, research applicable tax law, and complete various individual tax forms.

ACC 130  Business Income Taxes  2 2 0 0 3
This course introduces the relevant laws governing business and fiduciary income taxes. Topics include tax law relating to business organizations, electronic research and methodologies, and the use of technology for the preparation of business tax returns. Upon completion, students should be able to analyze basic tax scenarios, research applicable tax law, and complete various business tax forms.

ACC 140  Payroll Accounting  1 2 0 0 2
Prerequisites: ACC 115 or ACC 120
This course covers federal and state laws pertaining to wages, payroll taxes, payroll tax forms, and journal and general ledger transactions. Emphasis is placed on computing wages; calculating social security, income, and unemployment taxes; preparing appropriate payroll tax forms; and journalizing/posting transactions. Upon completion, students should be able to analyze data, make appropriate computations, complete forms, and prepare accounting entries using appropriate technology.

ACC 150  Acct Software Applications  1 2 0 0 2
Prerequisites: ACC 115 or ACC 120
This course introduces microcomputer applications related to accounting systems. Topics include general ledger, accounts receivable, accounts payable, inventory, payroll, and correcting, adjusting, and closing entries. Upon completion, students should be able to use a computer accounting package to solve accounting problems.

ACC 220  Intermediate Accounting I  3 2 0 0 4
Prerequisites: ACC 120
This course is a continuation of the study of accounting principles with in-depth coverage of theoretical concepts and financial statements. Topics include generally accepted accounting principles and extensive analysis of balance sheet components. Upon completion, students should be able to demonstrate competence in the conceptual framework underlying financial accounting, including the application of financial standards.

ACC 227  Practices in Accounting  3 0 0 0 3
Prerequisites: ACC 220
This course provides an advanced in-depth study of selected topics in accounting using case studies and individual and group problem solving. Topics include cash flow, financial statement analysis, individual and group problem solving, and practical approaches to dealing with clients, ethics, and critical thinking. Upon completion, students should be able to demonstrate competent analytical skills and effective communication of their analysis in written and/or oral presentations.

AGRICULTURE

AGR 121  Biological Pest Mgmt  3 0 0 0 3
This course will emphasize the building and maintaining of healthy soil, plant and insect biological cycles as the key to pest and disease management. Course content includes study of major pests and diseases, including structure, life cycle, and favored hosts; and biological and least toxic methods of chemical control. Upon completion, students will be able to identify and recommend methods of prevention and control of selected insects and diseases.

AGR 265  Organic Crop Prod: Spring  2 2 0 0 3
This course includes a study of spring organic crop production practices, including vegetables, cut flowers, and culinary and medicinal herbs. Topics include variety selection, production methods, and record keeping procedures for certification. Upon completion, students will be able to demonstrate knowledge of organic crop production appropriate for the spring season.

AGR 267  Permaculture  2 2 0 0 3
This course introduces the design of sustainable human habitats as part of a sustainable system, with emphasis placed on living systems of the temperate region. Topics include fundamentals of permaculture system design for farms, including gardens, fields, water, animals, buildings, economics, and society. Upon completion, students should be able to design a functional holistic farm system.
AIR CONDITIONING, HEATING, AND REFRIGERATION

AHR 110 Introduction to Refrigeration 2 6 0 0 5
This course introduces the basic refrigeration process used in mechanical refrigeration and air conditioning systems. Topics include terminology, safety, and identification of function of components; refrigeration cycle; and tools and instrumentation used in mechanical refrigeration systems. Upon completion, students should be able to identify refrigeration systems and components, explain the refrigeration process, and use the tools and instrumentation of the trade.

AHR 111 HVACR Electricity 2 2 0 0 3
This course introduces electricity as it applies to HVACR equipment. Emphasis is placed on power sources, interaction of electrical components, wiring of simple circuits, and the use of electrical test equipment. Upon completion, students should be able to demonstrate good wiring practices and the ability to read simple wiring diagrams.

AHR 112 Heating Technology 2 4 0 0 4
This course covers the fundamentals of heating including oil, gas, and electric heating systems. Topics include safety, tools and instrumentation, system operating characteristics, installation techniques, efficiency testing, electrical power, and control systems. Upon completion, students should be able to explain the basic oil, gas, and electrical heating systems and describe the major components of a heating system.

AHR 113 Comfort Cooling 2 4 0 0 4
This course covers the installation procedures, system operations, and maintenance of residential and light commercial comfort cooling systems. Topics include terminology, component operation, and testing and repair of equipment used to control and produce assured comfort levels. Upon completion, students should be able to use psychometrics, manufacturer specifications, and test instruments to determine proper system operation.

AHR 114 Heat Pump Technology 2 4 0 0 4
Prerequisites: AHR 110 or AHR 113
This course covers the principles of air source and water source heat pumps. Emphasis is placed on safety, modes of operation; defrost systems, refrigerant charging, and system performance. Upon completion, students should be able to understand and analyze system performance and perform routine service procedures.

AHR 120 HVACR Maintenance 1 3 0 0 2
This course introduces the basic principles of industrial air conditioning and heating systems. Emphasis is placed on preventive maintenance procedures for heating and cooling equipment and related components. Upon completion, students should be able to perform routine preventive maintenance tasks, maintain records, and assist in routine equipment repairs.

AHR 130 HVAC Controls 2 2 0 0 3
Prerequisites: AHR 111, ELC 111, or ELC 112
This course covers the types of controls found in residential and commercial comfort systems. Topics include electrical and electronic controls, control schematics and diagrams, test instruments, and analysis and troubleshooting of electrical systems. Upon completion, students should be able to diagnose and repair common residential and commercial comfort system controls.

AHR 160 Refrigerant Certification 1 0 0 0 1
This course covers the requirements for the EPA certification examinations. Topics include small appliances, high-pressure systems, and low-pressure systems. Upon completion, students should be able to demonstrate knowledge of refrigerants and be prepared for the EPA certification examinations.

AHR 180 HVACR Customer Relations 1 0 0 0 1
This course introduces common business and customer relation practices that may be encountered in HVACR. Topics include business practices, appearance of self and vehicle, ways of handling customer complaints, invoices, telephone communications, and warranties. Upon completion, students should be able to present themselves to customers in a professional manner, understand how the business operates, complete invoices, and handle complaints.

AHR 210 Residential Building Code 1 2 0 0 2
This course covers the residential building codes that are applicable to the design and installation of HVAC systems. Topics include current residential codes as applied to HVAC design, service, and installation. Upon completion, students should be able to demonstrate the correct usage of residential building codes that apply to specific areas of the HVAC trade.

AHR 213 HVACR Building Code 1 2 0 0 2
This course covers the North Carolina codes that are applicable to the design and installation of HVACR systems. Topics include current North Carolina codes as applied to HVACR design, service, and installation. Upon completion, students should be able to demonstrate the correct usage of North Carolina codes that apply to specific areas of the HVAC trade.

AHR 255 Indoor Air Quality 1 2 0 0 2
This course covers the residential building codes that are applicable to the design and installation of HVAC systems. Topics include current residential codes as applied to HVAC design, service, and installation. Upon completion, students should be able to demonstrate the correct usage of residential building codes that apply to specific areas of the HVAC trade.

ALTERNATIVE ENERGY TECHNOLOGY

ALT 120 Renewable Energy Tech 2 2 0 0 3
This course provides an introduction to multiple technologies that allow for the production and conservation of energy from renewable sources. Topics include hydro-electric, wind power, passive and active solar energy, tidal energy; appropriate building techniques, and energy conservation methods. Upon completion, students should be able to demonstrate an understanding of renewable energy production and its impact on humans and their environment.

ALT 220 Photovoltaic Sys Tech 2 3 0 0 3
This course introduces the concepts, tools, techniques, and materials needed to understand systems that convert solar energy into electricity with photovoltaic (pv) technologies. Topics include site analysis for system integration, building codes, and advances in photovoltaic technology. Upon completion, students should be able to demonstrate an understanding of the principles of photovoltaic technology and current applications.

ANTHROPOLOGY

ANT 210 General Anthropology 3 0 0 0 3
This course introduces the physical, archaeological, linguistic, and ethnological fields of anthropology. Topics include human origins, genetic variations, archaeology, linguistics, primatology, and contemporary cultures. Upon completion, students should be able to demonstrate an understanding of the four major fields of anthropology. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

ART

ART 111 Art Appreciation 3 0 0 0 3
This course introduces the origins and historical development of art. Emphasis is placed on the relationship of design principles to various art forms including but not limited to sculpture, painting, and architecture. Upon completion, students should be able to identify and analyze a variety of artistic styles, periods, and media. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ART 114 Art History Survey I 3 0 0 0 3
This course covers the development of art forms from ancient times to the Renaissance. Emphasis is placed on content, terminology,
design, and style. Upon completion, students should be able to demonstrate an historical understanding of art as a product reflective of human social development. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ART 115  Art History Survey II  3 0 0 0 3
This course covers the development of art forms from the Renaissance to the present. Emphasis is placed on content, terminology, design, and style. Upon completion, students should be able to demonstrate an historical understanding of art as a product reflective of human social development. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ART 121  Two-Dimensional Design  0 6 0 0 3
This course introduces the elements and principles of design as applied to two-dimensional art. Emphasis is placed on the structural elements, the principles of visual organization, and the theories of color mixing and interaction. Upon completion, students should be able to understand and use critical and analytical approaches as they apply to two-dimensional visual art. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 122  Three-Dimensional Design  0 6 0 0 3
This course introduces basic studio problems in three-dimensional visual design. Emphasis is placed on the structural elements and organizational principles as applied to mass and space. Upon completion, students should be able to apply three-dimensional design concepts. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 131  Drawing I  0 6 0 0 3
Prerequisites: ART 131
This course introduces the language of drawing and the use of various drawing materials. Emphasis is placed on drawing techniques, media, and graphic principles. Upon completion, students should be able to demonstrate competence in the use of graphic form and various drawing processes. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 132  Drawing II  0 6 0 0 3
Prerequisites: ART 131
This course continues instruction in the language of drawing and the use of various materials. Emphasis is placed on experimentation in the use of drawing techniques, media, and graphic materials. Upon completion, students should be able to demonstrate increased competence in the expressive use of graphic form and techniques. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

ART 135  Figure Drawing I  0 6 0 0 3
Prerequisites: ART 131
This course introduces rendering the human figure with various drawing materials. Emphasis is placed on the use of the visual elements, anatomy, and proportion in the representation of the draped and undraped figure. Upon completion, students should be able to demonstrate competence in drawing the human figure. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 171  Computer Art I  0 6 0 0 3
This course introduces the use of the computer as a tool for solving visual problems. Emphasis is placed on fundamentals of computer literacy and design through bit-mapped image manipulation. Upon completion, students should be able to demonstrate an understanding of paint programs, printers, and scanners to capture, manipulate, and output images. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 211  Printmaking I  0 6 0 0 3
This course introduces printmaking: its history, development techniques, and processes. Emphasis is placed on basic applications with investigation into image source and development. Upon completion, students should be able to produce printed images utilizing a variety of methods. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 232  Printmaking II  0 6 0 0 3
Prerequisites: ART 231
This course includes additional methods and printmaking processes. Emphasis is placed on the printed image as related to method, source, and concept. Upon completion, students should be able to produce expressive images utilizing both traditional and innovative methods. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 235  Figure Drawing II  0 6 0 0 3
Prerequisites: ART 135
This course extends the study and rendering of the draped and undraped human figure. Emphasis is placed on the exploration of materials and approaches to drawing. Upon completion, students should be able to demonstrate creativity in the representation of the figure. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 240  Painting I  0 6 0 0 3
This course introduces the language of painting and the use of various painting materials. Emphasis is placed on the understanding and use of various painting techniques, media, and color principles. Upon completion, students should be able to demonstrate competence in the use of creative processes directed toward the development of expressive form. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 241  Painting II  0 6 0 0 3
Prerequisites: ART 240
This course provides a continuing investigation of the materials, processes, and techniques of painting. Emphasis is placed on the exploration of expressive content using a variety of creative processes. Upon completion, students should be able to demonstrate competence in the expanded use of form and variety. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 264  Digital Photography I  1 4 0 0 3
This course introduces digital photographic equipment, theory and processes. Emphasis is placed on camera operation, composition, computer photo manipulation, and creative expression. Upon completion, students should be able to successfully expose, digitally manipulate, and print a well-conceived composition. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 265  Digital Photography II  1 4 0 0 3
Prerequisites: ART 264
This course provides exploration of the concepts and processes of photo manipulation through complex composite images, special effects, color balancing, and image/text integration. Emphasis is placed on creating a personal vision and style. Upon completion, students should be able to produce well-executed images using a variety of photographic and photo manipulative approaches. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.
ART 266 Videography I 0 6 0 0 3
This course introduces various aspects of basic video production including concept development, scripting, camera operation, and post-production. Emphasis is placed on creative expression, camera handling, storyboarding, and editing. Upon completion, students should be able to demonstrate a basic understanding of videomaker operation and production techniques. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 267 Videography II 0 6 0 0 3
Prerequisites: ART 266
This course is designed to provide a framework for the production of a long-term video project. Emphasis is placed on realization of the unique creative vision. Upon completion, students should be able to produce a thematically coherent, edited video with sound and titling. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 271 Computer Art II 0 6 0 0 3
Prerequisites: ART 171
This course includes advanced computer imaging techniques. Emphasis is placed on creative applications of digital technology. Upon completion, students should be able to demonstrate command of computer systems and applications to express their personal vision. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 281 Sculpture I 0 6 0 0 3
This course provides an exploration of the creative and technical methods of sculpture with focus on the traditional processes. Emphasis is placed on developing basic skills as they pertain to three-dimensional expression in various media. Upon completion, students should be able to show competence in a variety of sculptural approaches. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 282 Sculpture II 0 6 0 0 3
Prerequisites: ART 281
This course builds on the visual and technical skills learned in ART 281. Emphasis is placed on developing original solutions to sculptural problems in a variety of media. Upon completion, students should be able to express individual ideas using the techniques and materials of sculpture. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 283 Ceramics I 0 6 0 0 3
This course provides an introduction to three-dimensional design principles using the medium of clay. Emphasis is placed on fundamentals of forming, surface design, glaze application, and firing. Upon completion, students should be able to demonstrate skills in slab and coil construction, simple wheel forms, glaze technique, and creative expression. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ART 284 Ceramics II 0 6 0 0 3
Prerequisites: ART 283
This course covers advanced hand building and wheel techniques. Emphasis is placed on creative expression, surface design, sculptural quality, and glaze effect. Upon completion, students should be able to determine a high level of technical competence in forming and glazing with a development of three-dimensional awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

AMERICAN SIGN LANGUAGE

ASL 111 Elementary ASL I 3 0 0 0 3
Corequisites: ASL 181
This course introduces the fundamental elements of American Sign Language within a cultural context. Emphasis is placed on the development of basic expressive and receptive skills. Upon completion, students should be able to comprehend and respond with grammatical accuracy to expressive American Sign Language and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ASL 112 Elementary ASL II 3 0 0 0 3
Corequisites: ASL 111
This course is a continuation of ASL 111 focusing on the fundamental elements of American Sign Language in a cultural context. Emphasis is placed on the progressive development of expressive and receptive skills. Upon completion, the students should be able to comprehend and respond with increasing accuracy to expressive American Sign Language and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ASL 181 ASL Lab 1 0 2 0 0 1
Corequisites: ASL 111
This course provides an opportunity to enhance acquisition of the fundamental elements of American Sign Language. Emphasis is placed on the progressive development of basic expressive and receptive skills through the use of supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with grammatical accuracy to expressive American Sign Language and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ASL 182 ASL Lab 2 0 2 0 0 1
Corequisites: ASL 181
This course provides an opportunity to enhance acquisition of the fundamental elements of American Sign Language. Emphasis is placed on the progressive development of basic expressive and receptive skills through the use of supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with increasing proficiency to expressive American Sign Language and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ASL 211 Intermediate ASL I 3 0 0 0 3
Corequisites: ASL 112
This course provides a review and expansion of the essential skills of American Sign Language. Emphasis is placed on the progressive development of expressive and receptive skills, study of authentic and representative literacy and cultural texts. Upon completion, students should be able to communicate effectively, accurately, and creatively using American Sign Language about the past, present, and future. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ASL 212 Intermediate ASL II 3 0 0 0 3
Corequisites: ASL 211
This course provides a continuation of ASL 211. Emphasis is placed on the continuing development of expressive and receptive skills, with study of authentic and representative literacy and cultural texts. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.
This course introduces the basic principles of automated manufacturing and describes the tasks that technicians perform on the job. Topics include the history, development, and current applications of robots and automated systems including their configuration, operation, components, and controls. Upon completion, students should be able to understand the basic concepts of automation and robotic systems.

**ATR 211**  
Robot Programming  
2 3 0 0 3  
This course provides the operational characteristics of robots and programming in their respective languages. Topics include robot programming, teach pendants, PLC integration, operator interfaces, the interaction of external sensors, machine vision, network systems, and other related devices. Upon completion, students should be able to program and demonstrate the operation of various robots.

**ATR 219**  
Automation Troubleshooting  
1 3 0 0 2  
This course introduces troubleshooting procedures used in automated systems. Topics include logical fault isolation, diagnostic software usage, component replacement techniques, and calibration; safety of equipment; and protection of equipment while troubleshooting. Upon completion, students should be able to analyze and troubleshoot an automated system.

**ALTERNATIVE TRANSPORTATION TEC**

**ATT 115**  
Green Trans Safety & Service  
1 2 0 0 2  
This course covers workplace safety, hazardous material and environmental regulation relevant to electric, hybrid and alternative fueled vehicles. Topics include safety of high voltage vehicle systems, gaseous fuel systems and alternative liquid fuels. Upon completion, students should be able to demonstrate safe work practices, utilize appropriate shop tools and explain government regulations associated with alternative transportation.

**ATT 125**  
Hybrid-Electric Transportation  
2 4 0 0 4  
Prerequisites: TRN 120  
This course covers the theory and operation of hybrid-electric drive vehicles. Topics include maintenance, diagnostics, repair and safety procedures for electrically propelled and hybrid vehicles. Upon completion, students should be able to perform diagnostics, maintenance and repair hybrid-electric drive vehicles.

**ATT 130**  
Biofuels for Transportation  
2 3 0 0 3  
This course covers handling and usage procedures for liquid biofuels used in internal combustion engines. Emphasis is placed on recognizing, evaluating and diagnosing the impact of Biodiesel and Ethanol on fuel, engine and emission systems. Upon completion, students should be able to maintain, diagnose and service vehicles using straight or blended liquid biofuels.

**ATT 135**  
Gaseous Fuels for Transportation  
2 3 0 0 3  
This course covers handling and usage procedures for liquefied petroleum gas and compressed natural gas used in internal combustion engines. Emphasis is placed on safety and service procedures for liquefied petroleum gas and compressed natural gas fuel systems. Upon completion, students should be able to maintain, diagnose and service vehicles using liquefied petroleum gas or compressed natural gas fuel systems.

**ATT 140**  
Emerging Transp Tech  
2 3 0 0 3  
This course covers emerging technologies in the automotive industry and diagnostic procedures associated with those technologies. Topics include exploring new technologies, diagnostic tools, methods and repairs. Upon completion, students should be able to demonstrate practical skills applicable to emerging automotive technologies.

**AUTOMOTIVE BODY REPAIR**

**AUB 111**  
Painting and Refinishing I  
2 6 0 0 4  
This course introduces the proper procedures for using automotive refinishing equipment and materials in surface preparation and application. Topics include federal, state, and local regulations, personal safety, refinishing equipment and materials, surface preparation, masking, application techniques, and other related...
topics. Upon completion, students should be able to identify and use proper equipment and materials in refinishing following accepted industry standards.

**AUB 112 Painting and Refinishing II**  
**Prerequisites:** AUB 111  
2 6 0 0 4  
This course covers advanced painting techniques and technologies with an emphasis on identifying problems encountered by the refinishing technician. Topics include materials application, color matching, correction of refinishing problems, and other related topics. Upon completion, students should be able to perform spot, panel, and overall refinishing repairs and identify and correct refinishing problems.

**AUB 114 Special Finishes**  
**Prerequisites:** AUB 111  
1 2 0 0 2  
This course introduces multistage finishes, custom painting, and protective coatings. Topics include base coats, advanced intermediate coats, clear coats, and other related topics. Upon completion, students should be able to identify and apply specialized finishes based on accepted industry standards.

**AUB 121 Non-Structural Damage I**  
1 4 0 0 3  
This course introduces safety, tools, and the basic fundamentals of body repair. Topics include shop safety, damage analysis, tools and equipment, repair techniques, materials selection, materials usage, and other related topics. Upon completion, students should be able to identify and repair or replace direct and indirect damage including removal/repairing/ replacing of body panels to accepted standards.

**AUB 122 Non-Structural Damage II**  
2 6 0 0 4  
This course covers safety, tools, and advanced body repair. Topics include shop safety, damage analysis, tools and equipment, advanced repair techniques, materials selection, materials usage, movable glass, and other related topics. Upon completion, students should be able to identify and repair or replace direct and indirect damage to accepted standards including movable glass and hardware.

**AUB 131 Structural Damage I**  
2 4 0 0 4  
This course introduces safety, equipment, structural damage analysis, and damage repairs. Topics include shop safety, design and construction, structural analysis and measurement, equipment, structural glass, repair techniques, and other related topics. Upon completion, students should be able to analyze and perform repairs to a vehicle that has received light/moderate structural damage.

**AUB 132 Structural Damage II**  
**Prerequisites:** AUB 131  
2 6 0 0 4  
This course provides an in-depth study of structural damage analysis and repairs to vehicles that have received moderate to heavy structural damage. Topics include shop safety, structural analysis and measurement, equipment, structural glass, advanced repair techniques, structural component replacement and alignment, and other related topics. Upon completion, students should be able to analyze and perform repairs according to industry standards.

**AUB 136 Plastics and Adhesives**  
1 4 0 0 3  
This course covers safety, plastic and adhesive identification, and the various repair methods of automotive plastic components. Topics include safety, identification, preparation, material selection, and the various repair procedures including refinishing. Upon completion, students should be able to identify, remove, repair, and/or replace automotive plastic components in accordance with industry standards.

**AUB 160 Body Shop Operations**  
1 0 0 0 1  
This course introduces the day-to-day operations of autobody repair facilities. Topics include work habits and ethics, customer relations, equipment types, materials cost and control, policies and procedures, shop safety and liabilities, and other related topics. Upon completion, students should be able to understand the general operating policies and procedures associated with an autobody repair facility.
AUT 163 Adv Auto Electricity 2 3 0 0 3  
Prerequisites: TRN 120  
This course covers electronic theory, wiring diagrams, test equipment, and diagnosis, repair, and replacement of electronics, lighting, gauges, horn, wiper, accessories, and body modules. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

AUT 163A Adv Auto Electricity Lab 0 3 0 0 1  
Corequisites: AUT 163  
This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, troubleshooting and emerging electrical/electronic systems technologies. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

AUT 181 Engine Performance 1 2 3 0 0 3  
This course covers the introduction, theory of operation, and basic diagnostic procedures required to restore engine performance to vehicles equipped with complex engine control systems. Topics include an overview of engine operation, ignition components and systems, fuel delivery, injection components and systems and emission control devices. Upon completion, students should be able to describe operation and diagnose/repair basic ignition, fuel and emission related driveability problems using appropriate test equipment/service information.

AUT 181A Engine Performance 1 Lab 0 3 0 0 1  
Corequisites: AUT 181  
This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include overviews of engine operation, ignition components and systems, fuel delivery, injection components and systems and emission control devices and emerging engine performance technologies. Upon completion, students should be able to describe operation and diagnose/repair basic ignition, fuel and emission related driveability problems using appropriate test equipment/service information.

AUT 183 Engine Performance 2 2 6 0 0 4  
Prerequisites: AUT 181  
This course covers study of the electronic engine control systems, the diagnostic process used to locate engine performance concerns, and procedures used to restore normal operation. Topics will include currently used fuels and fuel systems, exhaust gas analysis, emission control components and systems, OBD II (on-board diagnostics) and inter-related electrical/electronic systems. Upon completion, students should be able to diagnose and repair complex engine performance concerns using appropriate test equipment and service information.

AUT 213 Automotive Servicing 2 1 3 0 0 2  
This course is a lab used as an alternative to co-op placement. Emphasis is placed on shop operations, troubleshooting, testing, adjusting, repairing, and replacing components using appropriate test equipment and service information. Upon completion, students should be able to perform a variety of automotive repairs using proper service procedures and to operate appropriate equipment.

AUT 221 Auto Transm/Transaxles 2 3 0 0 3  
This course covers operation, diagnosis, service, and repair of automatic transmissions/transaxles. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to explain operational theory, diagnose and repair automatic drive trains.

AUT 221A Auto Transm/Transax Lab 0 3 0 0 1  
Corequisites: AUT 221  
This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to diagnose and repair automatic drive trains.

AUT 231 Man Trans/Axes/Drtrains 2 3 0 0 3  
This course covers the operation, diagnosis, and repair of manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Topics include theory of torque, power flow, and manual drive train servicing and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to explain operational theory, diagnose and repair manual drive trains.

AUT 231A Man Trans/Axes/Drtrains Lab 0 3 0 0 1  
Corequisites: AUT 231  
This course is an optional lab for the program that needs to meet NATEF hour standards but does not have a co-op component in the program. Topics include manual drive train diagnosis, service and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to diagnose and repair manual drive trains.

BANKING AND FINANCE

BAF 110 Principles of Banking 3 0 0 0 3  
This course covers the fundamentals of bank functions in a descriptive fashion. Topics include banks and the monetary system, the relationship of banks to depositors, the payment functions, bank loans and accounting, regulations, and examinations. Upon completion, students should be able to demonstrate an understanding of the business of banking from a broad perspective.

BAF 131 Fund of Bank Lending 3 0 0 0 3  
Prerequisites: ACC 120  
Prerequisites: Registered in Banking Major  
This course introduces the basic knowledge and skills needed to be an effective lender. Topics include the functions of the loan interview and credit investigation, the “C”s of credit, elements of loan documentation, and warning signs of problem loans. Upon completion, students should be able to demonstrate an understanding of the credit functions and regulatory issues affecting this key banking function.

BAF 141 Law & Banking Principles 3 0 0 0 3  
Prerequisites: Registered in Banking Major  
This course provides an overview of the legal aspects of banking and the legal framework within which banks function. Topics include the court system, consumer protection, tangible and intangible property ownership, and the legalities and regulations of bank transactions. Upon completion, students should be able to discuss the non-technical aspects of the legal system and how these affect the bank’s organization and operation.

BAF 222 Money and Banking 3 0 0 0 3  
Prerequisites: Registered in Banking Major  
This course provides a fundamental treatment of how money and banks function in the US and world economies. Topics include the roles of money in the US economy, the functions of the Federal Reserve Board, and the workings of monetary and fiscal policies. Upon completion, students should be able to explain how the monetary economy functions, how banks are creators of money, and the impact of the Federal Reserve.

BIOLOGY

BIO 090 Foundations of Biology 3 2 0 0 4  
Corequisites: RED 090  
This course introduces basic biological concepts. Topics include basic biochemistry, cell structure and function, interrelationships among organisms, scientific methodology, and other related topics. Upon
completion, students should be able to demonstrate preparedness for college-level biology courses. A student must earn a “C” or better to progress to the next class. A lab fee is required.

**BIO 111 General Biology I**

Prerequisites: High School biology or BIO 090

This course introduces the principles and concepts of biology. Emphasis is placed on basic biological chemistry, cell structure and function, metabolism and energy transformation, genetics, evolution, classification, and other related topics. Upon completion, students should be able to demonstrate understanding of life at the molecular and cellular levels. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

**BIO 112 General Biology II**

Prerequisites: BIO 111

This course is a continuation of BIO 111. Emphasis is placed on organisms, biodiversity, plant and animal systems, ecology, and other related topics. Upon completion, students should be able to demonstrate comprehension of life at the organismal and ecological levels. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

**BIO 120 Introductory Botany**

Prerequisites: BIO 110 or BIO 111

This course provides an introduction to the classification, relationships, structure, and function of plants. Topics include reproduction and development of seed and non-seed plants, levels of organization, form and function of systems, and a survey of major taxa. Upon completion, students should be able to demonstrate comprehension of plant form and function, including selected taxa of both seed and non-seed plants. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

**BIO 130 Introductory Zoology**

Prerequisites: BIO 110 or BIO 111

This course provides an introduction to the classification, relationships, structure, and function of major animal phyla. Emphasis is placed on levels of organization, reproduction and development, comparative systems, and a survey of selected phyla. Upon completion, students should be able to demonstrate comprehension of animal form and function including comparative systems of selected groups. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

**BIO 140 Environmental Biology**

Corequisites: BIO 140A

This course introduces environmental processes and the influence of human activities upon them. Topics include ecological concepts, population growth, natural resources, and a focus on current environmental problems from scientific, social, political, and economic perspectives. Upon completion, students should be able to demonstrate an understanding of environmental interrelationships and of contemporary environmental issues. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

**BIO 140A Environmental Biology Lab**

Corequisites: BIO 140

This course provides a laboratory component to complement BIO 140. Emphasis is placed on laboratory and field experience. Upon completion, students should be able to demonstrate an understanding of environmental interrelationships and of contemporary environmental issues. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

**BIO 145 Ecology**

Prerequisites: BIO 111

This course provides an introduction to ecological concepts using an ecosystems approach. Topics include energy flow, nutrient cycling, succession, population dynamics, community structure, and other related topics. Upon completion, students should be able to demonstrate comprehension of basic ecosystem structure and dynamics. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. A lab fee is required.

**BIO 163 Basic Anatomy and Physiology**

Prerequisites: RED 090; CHM 092 or High School chemistry; and BIO 090 or Or biology

This course is the first of a two-course sequence which provides a comprehensive study of the anatomy and physiology of the human body. Topics include the structure, function, and interrelationship of organ systems with emphasis on the processes which maintain homeostasis. Upon completion, students should be able to demonstrate an in-depth understanding of principles of anatomy and physiology and their interrelationships. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. A lab fee is required.

**BIO 165 Anatomy and Physiology I**

Prerequisites: BIO 165

This course is the second in a two-course sequence which provides a comprehensive study of the anatomy and physiology of the human body. Topics include the structure, function, and interrelationship of organ systems with emphasis on the processes which maintain homeostasis. Upon completion, students should be able to demonstrate an in-depth understanding of principles of anatomy and physiology and the interrelationships of all body systems. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. A lab fee is required.

**BIO 175 General Microbiology**

Prerequisites: BIO 111 or BIO 163 or BIO 165

This course covers principles of microbiology with emphasis on microorganisms and human disease. Topics include an overview of microbiology and aspects of medical microbiology, identification and control of pathogens, disease transmission, host resistance, and immunity. Upon completion, students should be able to demonstrate knowledge of microorganisms and the disease process as well as aseptic and sterile techniques. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement. A lab fee is required.

**BIO 240 Waste Management**

Prerequisites: BIO 110 or BIO 111 or BIO 140/140A

This course is a study of human use of and impact on the environment. Topics include how human activities can negatively affect the land and water and how to avoid and cope with waste problems. Upon completion, students should be able to identify both hazardous and nonhazardous waste products and solutions for their management. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.
BIO 242 Natural Resource Conserv. 3 0 0 0 3
Prerequisites: BIO 112 or BIO140/140A
This course describes the importance of natural resources and their role in our environment. Emphasis is placed on the physical, biological, and ecological principles underlying natural resource conservation with attention to the biological consequences of human impacts. Upon completion, students should be able to demonstrate an understanding of natural resource conservation. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

BLUEPRINT READING
BPR 111 Print Reading 1 2 0 0 2
This course introduces the basic principles of print reading. Topics include line types, orthographic projections, dimensioning methods, and notes. Upon completion, students should be able to interpret basic prints and visualize the features of a part or system.

BPR 130 Print Reading-Construction 3 0 0 3
This course covers the interpretation of prints and specifications that are associated with design and construction projects. Topics include interpretation of documents for foundations, floor plans, elevations, and related topics. Upon completion, students should be able to read and interpret construction prints and documents.

BREWING, DISTILLATION AND FERMENTATION
BDF 110 Fermentation Production 2 4 0 0 4
This course introduces students to the basic methodologies used in fermentation. Emphasis is placed on the production of fermented products including ingredients, techniques, fermentation management, storage and sanitation. Upon completion, students should be able to design/produce pilot scale products to demonstrate how material selection and process conditions can generate different kinds/qualities of products.

BDF 111 BDF Safety & Sanitation 3 2 0 0 4
This course covers sanitation, handling and safety with fermentation products, facilities and equipment. Emphasis is placed on the proper chemicals, their selection, handling and storage for sanitation control within the fermentation environment. Upon completion, students should be able to safely maintain quality and stability of fermentation products.

BDF 112 Survey of Fermented Products 3 3 0 0 4
This course provides an introduction to fermented products. Emphasis will be placed on history, production, characteristics, taxonomy, products and evaluation. Upon completion, students should be able to identify and apply relevant factors and information related to fermented products.

BDF 114 Craft Beer Brewing 1 3 0 0 2
This course introduces entry level skills in craft beer brewing. Topics include recipe development, basic sanitation, techniques and equipment used in the production of small batch (5 gallon or less) of craft beer. Upon completion, students should be able to demonstrate how to produce small batches of craft beer and be able to extrapolate concepts to larger future production.

BDF 115 Applied Craft Bev Microbiology 3 2 0 0 4
This course provides an introduction to microbiology and laboratory practices in the brewing industry. Emphasis is placed on yeast biology, fermentation, microorganisms in brewery’s/distillation and sanitation. Upon completion, students should be able to demonstrate an understanding of microbiology, laboratory techniques, and commonly used analysis methodologies applied in the brewing industry.

BDF 125 Bev Tech & Calculations 1 3 0 0 2
This course introduces technology and mathematical calculations used in craft beverage production. Emphasis is placed on equipment and technology relating to scheduling/record keeping, and recipe development/alcohol control and ingredient usage calculations. Upon completion, students should be able to identify/demonstrate the technology and equipment used in craft beverage production and recipe development.

BDF 175 Distillation Operations 2 4 0 0 4
This course covers the principles and production techniques involved in the distillation of grains, fruits and other carbohydrates associated with craft beverage distillation. Emphasis is placed on materials/processing, fermentation applications, distillation technology, sensory evaluation, quality control, engineering and craft distillery management. Upon completion, students should be able to demonstrate an understanding of distillation operations/management and the impact of sanitation, fermentation, maturation and aging in the production of distillations.

BDF 225 Filtration & Finishing 2 2 0 0 3
This course covers processing/conditioning factors that affect the end quality and shelf life of fermented craft beverages. Topics include types/operation of filters, natural/forced carbonation, clarification, laagering, additives and product stabilization for packaging. Upon completion, students should be able to demonstrate an understanding of the processes associated with filtration, carbonation and finishing and their impact on the end product.

BDF 236 Brewing/Packaging Maintenance 2 4 0 0 4
This course covers the equipment in a brewing, distillation and fermentation facility and the techniques used for maintenance and troubleshooting. Topics include types of equipment, the role of equipment used in filling and packaging, troubleshooting, and the role of a maintenance technician. Upon completion, students should be able to set up, maintain and troubleshoot equipment in a brewing, distillation and fermentation facility using work techniques appropriate for the industry.

BUSINESS
BUS 110 Introduction to Business 3 0 0 0 3
This course provides a survey of the business world. Topics include the basic principles and practices of contemporary business. Upon completion, students should be able to demonstrate an understanding of business concepts as a foundation for studying other business subjects. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement. This course is also available through the Virtual Learning Community (VLC).

BUS 115 Business Law I 3 0 0 3
This course introduces the ethics and legal framework of business. Emphasis is placed on contracts, negotiable instruments, Uniform Commercial Code, and the working of the court systems. Upon completion, students should be able to apply ethical issues and laws covered to selected business decision-making situations. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement. This course is also available through the Virtual Learning Community (VLC).

BUS 116 Business Law II Prerequisites: BUS 115 3 0 0 0 3
This course continues the study of ethics and business law. Emphasis is placed on bailments, sales, risk-bearing, forms of business ownership, and copyrights. Upon completion, students should be able to apply ethical issues and laws covered to selected business decision-making situations. This course is also available through the Virtual Learning Community (VLC).

BUS 125 Personal Finance 3 0 0 0 3
This course provides a study of individual and family financial decisions. Emphasis is placed on building useful skills in buying, managing finances, increasing resources, and coping with current economic conditions. Upon completion, students should be able to develop a personal financial plan.
BUS 137  Principles of Management  3 0 0 0 3
This course is designed to be an overview of the major functions of management. Emphasis is placed on planning, organizing, controlling, directing, and communicating. Upon completion, students should be able to work as contributing members of a team utilizing these functions of management. This course is also available through the Virtual Learning Community (VLC). This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

BUS 153  Human Resource Management  3 0 0 0 3
This course introduces the functions of personnel/human resource management within an organization. Topics include equal opportunity and the legal environment, recruitment and selection, performance appraisal, employee development, compensation planning, and employee relations. Upon completion, students should be able to anticipate and resolve human resource concerns. This course is also available through the Virtual Learning Community (VLC).

BUS 225  Business Finance  2 2 0 0 3
Prerequisites: ACC 120
This course provides an overview of business financial management. Emphasis is placed on financial statement analysis, time value of money, management of cash flow, risk and return, and sources of financing. Upon completion, students should be able to interpret and apply the principles of financial management. This course is also available through the Virtual Learning Community (VLC).

BUS 228  Business Statistics  2 2 0 0 3
Prerequisites: MAT 115, MAT 140, or MAT 161
This course introduces the use of statistical methods and tools in evaluating research data for business applications. Emphasis is placed on basic probability, measures of spread and dispersion, central tendency, sampling, regression analysis, and inductive inference. Upon completion, students should be able to apply statistical problem solving to business. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

BUS 239  Bus Applications Seminar  1 2 0 0 2
Prerequisites: ACC 120, BUS 115, BUS 137, MKT 120 and either ECO 151, ECO 251 or ECO 252
This course is designed as a capstone course for Business Administration majors. Emphasis is placed on decision making in the areas of management, marketing, production, purchasing, and finance. Upon completion, students should be able to apply the techniques, processes, and vital professional skills needed in the workplace. This course is also available through the Virtual Learning Community (VLC).

BUS 240  Business Ethics  3 0 0 0 3
This course introduces contemporary and controversial ethical issues that face the business community. Topics include moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Upon completion, students should be able to demonstrate an understanding of their moral responsibilities and obligations as members of the workforce and society.

BUS 270  Professional Development  3 0 0 0 3
This course provides basic knowledge of self-improvement techniques as related to success in the professional world. Topics include positive human relations, job-seeking skills, and projecting positive self-image. Upon completion, students should be able to demonstrate competent personal and professional skills necessary to get and keep a job.

BUS 280  REAL Small Business  4 0 0 0 4
This course introduces hands-on techniques and procedures for planning and opening a small business, including the personal qualities needed for entrepreneurship. Emphasis is placed on market research, finance, time management, and day-to-day activities of owning/operating a small business. Upon completion, students should be able to write and implement a viable business plan and seek funding.

CHEMISTRY

CHM 092  Fundamentals of Chemistry  3 2 0 0 4
Prerequisites: DMA 010-060
This course covers fundamentals of chemistry with laboratory applications. Topics include measurements, matter, energy, atomic theory, bonding, molecular structure, nomenclature, balancing equations, stoichiometry, solutions, acids and bases, gases, and basic organic chemistry. Upon completion, students should be able to understand and apply basic chemical concepts and demonstrate basic laboratory skills necessary for success in college-level science courses. A student must earn a “C” or better to progress to the next class; lab fee required.

CHM 131  Introduction to Chemistry  3 0 0 0 3
Prerequisites: High School chemistry or CHM 092; DMA 010, DMA 070 and DMA 080
Corequisites: CHM 131A
This course introduces the fundamental concepts of inorganic chemistry. Topics include measurement, matter and energy, atomic and molecular structure, nuclear chemistry, stoichiometry, chemical formulas and reactions, chemical bonding, gas laws, solutions, and acids and bases. Upon completion, students should be able to demonstrate a basic understanding of chemistry as it applies to other fields. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

CHM 131A  Introduction to Chemistry Lab  0 3 0 0 1
Corequisites: CHM 131
This course is a laboratory to accompany CHM 131. Emphasis is placed on laboratory experiences that enhance materials presented in CHM 131. Upon completion, students should be able to utilize basic laboratory procedures and apply them to chemical principles presented in CHM 131. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

CHM 132  Organic and Biochemistry  3 3 0 0 4
Prerequisites: CHM 131 and CHM 131A or CHM 151
This course provides a survey of major functional classes of compounds in organic and biochemistry. Topics include structure, properties, and reactions of the major organic and biological molecules and basic principles of metabolism. Upon completion, students should be able to demonstrate an understanding of fundamental chemical concepts needed to pursue studies in related professional fields. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

CHM 151  General Chemistry I  3 3 0 0 4
Prerequisites: High school chemistry or CHM 092, DMA 010, DMA 070 and DMA 080
This course covers fundamental principles and laws of chemistry. Topics include measurement, atomic and molecular structure, periodicity, chemical reactions, chemical bonding, stoichiometry, thermochimistry, gas laws, and solutions. Upon completion, students should be able to demonstrate an understanding of fundamental chemical laws and concepts as needed in CHM 152. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

CHM 152  General Chemistry II  3 3 0 0 4
Prerequisites: CHM 151
This course provides a continuation of the study of the fundamental principles and laws of chemistry. Topics include kinetics, equilibrium, ionic and redox equations, acid-base theory, electrochemistry, thermodynamics, introduction to nuclear and organic chemistry, and complex ions. Upon completion, students should be able to...
demonstrate an understanding of chemical concepts as needed to pursue further study in chemistry and related professional fields. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. A lab fee is required.

CHM 251  Organic Chemistry I  3 3 0 0 4
Prerequisites: CHM 152
This course provides a systematic study of the theories, principles, and techniques of organic chemistry. Topics include nomenclature, structure, properties, reactions, and mechanisms of hydrocarbons, alkyl halides, alcohols, and ethers; further topics include isomerization, stereochemistry, and spectroscopy. Upon completion, students should be able to demonstrate an understanding of the fundamental concepts of covered organic topics as needed in CHM 252.

CHM 252  Organic Chemistry II  3 3 0 0 4
Prerequisites: CHM 251
This course provides continuation of the systematic study of the theories, principles, and techniques of organic chemistry. Topics include nomenclature, structure, properties, reactions, and mechanisms of aromatics, aldehydes, ketones, carboxylic acids and derivatives, amines and heterocyclics; multi-step synthesis will be emphasized. Upon completion, students should be able to demonstrate an understanding of organic concepts as needed to pursue further study in chemistry and related professional fields.

COMPUTER INFORMATION SYSTEMS

CIS 070  Fundamentals of Computing  0 2 0 0 1
This course covers fundamental functions and operations of the computer. Topics include identification of components, overview of operating systems, and other basic computer operations. Upon completion, students should be able to operate computers, access files, print documents and perform basic applications operations.

CIS 110  Introduction to Computers  2 2 0 0 3
This course introduces computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications. Upon completion, students should be able to demonstrate an understanding of the role and function of computers and use the computer to solve problems. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural science/mathematics (Quantitative Option). This course is also available through the Virtual Learning Community (VLC).

CIS 115  Intro to Programming and Logic  2 3 0 0 3
Prerequisites: DMA 010-080, MAT 120, MAT 121, MAT 161, MAT 171 or MAT 175
This course introduces computer programming and problem solving in a structured program logic environment. Topics include language syntax, data types, program organization, problem solving methods, algorithm design, and logic control structures. Upon completion, students should be able to manage files with operating system commands, use top-down algorithm design, and implement algorithmic solutions in a programming language. This course is also available through the Virtual Learning Community (VLC).

CRIMINAL JUSTICE

CJC 111  Intro to Criminal Justice  3 0 0 0 3
This course introduces the components and processes of the criminal justice system. Topics include history, structure, functions, and philosophy of the criminal justice system and their relationship to life in our society. Upon completion, students should be able to define and describe the major system components and their interrelationships and evaluate career options. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement. This course is also available through the Virtual Learning Community (VLC).

CJC 112  Criminology  3 0 0 0 3
This course introduces deviant behavior as it relates to criminal activity. Topics include theories of crime causation; statistical analysis of criminal behavior; past, present, and future social control initiatives; and other related topics. Upon completion, students should be able to explain and discuss various theories of crime causation and societal response. This course is also available through the Virtual Learning Community (VLC).

CJC 113  Juvenile Justice  3 0 0 0 3
This course covers the juvenile justice system and related juvenile issues. Topics include an overview of the juvenile justice system, treatment and prevention programs, special areas and laws unique to juveniles, and other related topics. Upon completion, students should be able to identify/discuss juvenile court structure/procedures, function and jurisdiction of juvenile agencies, processing/detention of juveniles, and case disposition. This course is also available through the Virtual Learning Community (VLC).

CJC 120  Interviews/Interrogations  1 2 0 0 2
This course covers basic and special techniques employed in criminal justice interviews and interrogations. Emphasis is placed on the interview/interrogation process, including interpretation of verbal and physical behavior and legal perspectives. Upon completion, students should be able to conduct interviews/interrogations in a legal, efficient, and professional manner and obtain the truth from suspects, witnesses, and victims.

CJC 121  Law Enforcement Operations  3 0 0 0 3
This course introduces fundamental law enforcement operations. Topics include the contemporary evolution of law enforcement operations and related issues. Upon completion, students should be able to explain theories, practices, and issues related to law enforcement operations. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement. This course is also available through the Virtual Learning Community (VLC).

CJC 122  Community Policing  3 0 0 0 3
This course covers the historical, philosophical, and practical dimensions of community policing. Emphasis is placed on the empowerment of police and the community to find solutions to problems by forming partnerships. Upon completion, students should be able to define community policing, describe how community policing strategies solve problems, and compare community policing to traditional policing.

CJC 131  Criminal Law  3 0 0 0 3
This course covers the history/evolution/principles and contemporary applications of criminal law. Topics include sources of substantive law, classification of crimes, parties to crime, elements of crimes, matters of criminal responsibility, and other related topics. Upon completion, students should be able to discuss the sources of law and identify, interpret, and apply the appropriate statutes/elements. This course is also available through the Virtual Learning Community (VLC).

CJC 132  Court Procedure and Evidence  3 0 0 0 3
This course covers judicial structure/process/procedure from incident to disposition, kinds and degrees of evidence, and the rules governing admissibility of evidence in court. Topics include consideration of state and federal courts, arrest, search and seizure laws, exclusionary and statutory rules of evidence, and other related issues. Upon completion, students should be able to identify and discuss procedures necessary to establish a lawful arrest/search, proper judicial procedures, and the admissibility of evidence. This course is also available through the Virtual Learning Community (VLC).

CJC 141  Corrections  3 0 0 0 3
This course covers the history, major philosophies, components, and current practices and problems of the field of corrections. Topics include historical evolution, functions of the various components, alternatives to incarceration, treatment programs, inmate control, and other related topics. Upon completion, students should be able to explain the various components, processes, and functions of
the correctional system. This course has been approved to satisfy
the Comprehensive Articulation Agreement for transferability as a
pre-major and/or elective course requirement. This course is also
available through the Virtual Learning Community (VLC).

CJC 144 Crime Scene Processing
Prerequisites: Registered Latent Evidence Major
This course introduces the theories and practices of crime scene
processing and investigating. Topics include legal considerations at
the crime scene, processing indoor and outdoor scenes, recording,
note taking, collection and preservation of evidence and submission
to the crime laboratory. Upon completion, the student should be able
to evaluate and search various crime scenes and demonstrate the
appropriate techniques.

CJC 146 Trace Evidence
Prerequisites: Registered Latent Evidence Major
This course provides a study of trace evidence as it relates to forensic
science. Topics include collection, packaging, and preservation of
trace evidence from crime scenes such as bombings, fires and other
scenes. Upon completion, students should be able to demonstrate
the fundamental concepts of trace evidence collection, preservation
and submission to the crime laboratory.

CJC 151 Intro to Loss Prevention
This course introduces the concepts and methods related to
commercial and private security systems. Topics include the historical,
philosophical, and legal basis of security, with emphasis on security
surveys, risk analysis, and associated functions. Upon completion,
students should be able to demonstrate understanding of security
systems, risk management, and the laws relative to loss prevention.

CJC 170 Critical Incident Management
for Public Safety
This course prepares the student to specialize in the direct response,
operations, and management of critical incidents. Emphasis is
placed upon the theoretical and applied models to understand
and manage disasters, terrorism, and school/workplace violence.
Upon completion, the student should be able to identify and discuss
managerial techniques, legal issues, and response procedures to
critical incidents.

CJC 212 Ethics and Community Relations
This course covers ethical considerations and accepted standards
applicable to criminal justice organizations and professionals. Topics
include ethical systems; social change, values, and norms; cultural
diversity; citizen involvement in criminal justice issues; and other
related topics. Upon completion, students should be able to apply
ethical considerations to the decision-making process in identifiable
criminal justice situations. This course is also available through the
Virtual Learning Community (VLC).

CJC 213 Substance Abuse
This course is a study of substance abuse in our society. Topics
include the history and classifications of drug abuse and the social,
physical, and psychological impact of drug abuse. Upon completion,
students should be able to identify various types of drugs, their effects
on human behavior and society, and treatment modalities.

CJC 215 Organization and Administration
This course introduces the components and functions of organization
and administration as it applies to the agencies of the criminal
justice system. Topics include operations/functions of organizations;
recruiting, training, and retention of personnel; funding and budgeting;
communications; span of control and discretion; and other related
topics. Upon completion, students should be able to identify and
discuss the basic components and functions of a criminal justice
organization and its administrative operations.

CJC 221 Investigative Principles
This course introduces the theories and fundamentals of the
investigative process. Topics include crime scene/incident processing,
information gathering techniques, collection/preservation of evidence,
This course provides work experience with a college-approved employer in an area related to the student’s program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**COE 114 Co-op Work Experience I**
0 0 0 40 4

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

**COE 115 Work Exp Seminar I**
1 0 0 0 1

Corequisites: COE 111
This course must be taken in conjunction with COE 111 in Community Spanish Interpreter and Interpreter Education. It provides the opportunity to discuss work experiences with peers and faculty. Emphasis is placed on planning, integrating, and evaluating work experiences.

**COE 121 Co-op Work Experience II**
0 0 0 10 1

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

**COE 122 Co-op Work Experience II**
0 0 0 20 2

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

**Co-op Work Experience III**
0 0 0 10 1

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

**Co-op Work Experience III**
0 0 0 20 2

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

**COE 211 Co-op Work Experience IV**
0 0 0 10 1

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

**COE 212 Co-op Work Experience IV**
0 0 0 20 2

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

**COMMUNICATION**

**COM 120 Intro Interpersonal Communication**
3 0 0 0 3

This course introduces the practices and principles of interpersonal communication in both dyadic and group settings. Emphasis is placed on the communication process, perception, listening, self-disclosure, speech apprehension, ethics, nonverbal communication, conflict, power, and dysfunctional communication relationships. Upon completion, students should be able to evaluate interpersonal communication skills, apply basic principles of group discussion, and manage conflict in interpersonal communication situations. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts (substitute).

**COM 140 Intro Intercultural Communication**
3 0 0 0 3

This course introduces techniques of cultural research, definitions, functions, characteristics, and impacts of cultural differences in public address. Emphasis is placed on how diverse backgounds influence the communication act and how cultural perceptions and experiences determine how one sends and receives messages. Upon completion, students should be able to demonstrate an understanding of the principles and skills needed to become effective in communicating outside one’s primary culture. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**COM 160 Small Group Communication**
3 0 0 0 3

This course provides an overview of the theory, practice, and critical analysis of communication in the small group setting. Emphasis is placed on group development, conflict, and conformity; leadership skills and styles; group roles and ranks; and decision making, problem solving, and conflict resolution. Upon completion, students should be able to apply topics of gender, culture, and social-emotional functions within group settings. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**COM 231 Public Speaking**
3 0 0 0 3

This course provides instruction and experience in preparation and delivery of speeches within a public setting and group discussion. Emphasis is placed on research, preparation, delivery, and evaluation of informative, persuasive, and special occasion public speaking. Upon completion, students should be able to prepare and deliver well-organized speeches and participate in group discussion with appropriate audiovisual support. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in speech/communication.

**COSMETOLOGY**

**COS 111 Cosmetology Concepts I**
4 0 0 0 4

Prerequisites: DMA 010-030
Corequisites: COS 112
This course introduces basic cosmetology concepts. Topics include safety, first aid, sanitation, bacteriology, anatomy, diseases and disorders, hygiene, product knowledge, chemistry, ethics, manucures,
and other related topics. Upon completion, students should be able to safely and competently apply cosmetology concepts in the salon setting.

**COS 112  Salon I**  
**Corequisites:** COS 111  
This course introduces basic salon services. Topics include scalp treatments, shampooing, rinsing, hair color, design, haircutting, permanent waving, pressing, relaxing, wigs, and other related topics. Upon completion, students should be able to safely and competently demonstrate salon services.

**COS 113  Cosmetology Concepts II**  
**Corequisites:** COS 114  
This course covers more comprehensive cosmetology concepts. Topics include safety, product knowledge, chemistry, manicuring, chemical restructuring, and hair coloring. Upon completion, students should be able to safely and competently apply these cosmetology concepts in the salon setting.

**COS 114  Salon II**  
**Corequisites:** COS 113  
This course provides experience in a simulated salon setting. Topics include basic skin care, manicuring, nail application, scalp treatments, shampooing, rinsing, hair color, design, haircutting, chemical restructuring, pressing, wigs, and other related topics. Upon completion, students should be able to safely and competently demonstrate these salon services.

**COS 115  Cosmetology Concepts III**  
**Corequisites:** COS 116  
This course covers more comprehensive cosmetology concepts. Topics include safety, product knowledge, salon management, salesmanship, skin care, electricity/light therapy, wigs, thermal hair styling, lash and brow tinting, superfluous hair removal, and other related topics. Upon completion, students should be able to safely and competently apply these cosmetology concepts in the salon setting.

**COS 116  Salon III**  
**Corequisites:** COS 115  
This course provides comprehensive experience in a simulated salon setting. Emphasis is placed on intermediate-level of skin care, manicuring, scalp treatments, shampooing, hair color, design, haircutting, chemical restructuring, pressing, and other related topics. Upon completion, students should be able to safely and competently demonstrate these salon services.

**COS 117  Cosmetology Concepts IV**  
**Corequisites:** COS 118  
This course covers advanced cosmetology concepts. Topics include chemistry and hair structure, advanced cutting and design, and an overview of all cosmetology concepts in preparation for the licensing examination. Upon completion, students should be able to demonstrate an understanding of these cosmetology concepts and meet program completion requirements.

**COS 118  Salon IV**  
**Prerequisites:** COS 114 and COS 116  
**Corequisites:** COS 117  
This course provides advanced experience in a simulated salon setting. Emphasis is placed on efficient and competent delivery of all salon services in preparation for the licensing examination and employment. Upon completion, students should be able to demonstrate competence in program requirements and the areas covered on the Cosmetology Licensing Examination and meet entry-level employment requirements.

**COS 119  Esthetics Concepts I**  
**Corequisites:** COS 112  
This course covers the concepts of esthetics. Topics include consultation, facials, body treatments, hair removal, make-up applications, and color analysis. Upon completion, students should be able to demonstrate esthetic services on clients in a salon setting.

**COS 120  Esthetics Salon I**  
**Prerequisites:** COS 119  
This course covers the techniques of esthetics in a comprehensive experience in a simulated salon setting. Topics include client consultation, facials, body treatments, hair removal, make-up applications, and color analysis. Upon completion, students should be able to safely and competently demonstrate esthetic services on clients in a salon setting.

**COS 121  Manicure/Nail Technology I**  
**Prerequisites:** COS 113  
This course covers techniques of nail technology, hand and arm massage, and recognition of nail diseases and disorders. Topics include OSHA/safety, sanitation, bacteriology, product knowledge, salesmanship, manicures, artificial applications, pedicures, massage, and other related topics. Upon completion, students should be able to safely and competently perform nail care, including manicures, pedicures, massage, decorating, and artificial applications in a salon setting.

**COS 125  Esthetics Concepts II**  
**Prerequisites:** COS 119  
This course covers more comprehensive esthetics. Topics include nutrition, business management, makeup, and color analysis. Upon completion, students should be able to demonstrate an understanding of the advanced esthetics concepts and meet course requirements.

**COS 126  Esthetics Salon II**  
**Prerequisites:** COS 120  
This course provides experience in a simulated esthetics setting. Topics include machine facials, aromatherapy, massage therapy, electricity, and apparatus. Upon completion, students should be able to demonstrate competence in program requirements and the areas covered on the Cosmetology licensing examination for Estheticians.

**COS 222  Manicure/Nail Technology II**  
**Prerequisites:** COS 121  
This course covers advanced techniques of nail technology, hand and arm massage. Topics include OSHA/safety, product knowledge, customer service, salesmanship, artificial applications, nail art, and other related topics. Upon completion, students should be able to demonstrate competence necessary for the licensing examination, including advanced nail care, artificial enhancements and decorations.

**COS 240  Contemporary Design**  
**Prerequisites:** COS 111 and COS 112  
This course covers methods and techniques for contemporary designs. Emphasis is placed on contemporary designs and other related topics. Upon completion, students should be able to demonstrate and apply techniques associated with contemporary design.

**COS 250  Computerized Salon Ops**  
**Prerequisites:** COS 251  
This course introduces computer and salon software. Emphasis is placed on various computer and salon software applications. Upon completion, students should be able to utilize computer skills and software applications in the salon setting.

**COS 251  Manicure Instructor Concepts**  
**Prerequisites:** NC Cosmetology or Manicurist License and  
This course introduces manicuring instructional concepts. Topics include orientation, theories of education, unit planning, daily lesson planning, laboratory management, student assessment, record keeping, and other related topics. Upon completion, students should be able to identify theories of education, develop lesson plans, demonstrate supervision techniques, and assess student classroom performance.

**COS 252  Manicure Instructor Practicum**  
**Prerequisites:** NC Cosmetology or Manicurist License and six months work experience in a cosmetic arts salon  
Corequisites: COS 251  
This course covers supervisory and instructional skills for teaching manicuring students in a laboratory setting. Topics include demonstrations of services, supervision, student assessment, and
other related topics. Upon completion, students should be able to
demonstrate competence in the areas covered by the Manicuring
Instructor Licensing Examination and meet program completion
requirements.

COS 253  Esthetics Instructor Concepts I    6 15 0 0 11
This course introduces esthetic instructional concepts and skills. Topics include orientation, theories of education, unit planning,
daily lesson plans, laboratory management, student assessment in
a laboratory setting. Upon completion, students should be able to
demonstrate esthetic services and instruct and objectively assess
student performance in a classroom setting.

COS 254  Esthetics Instructor Concepts II    6 15 0 0 11
Prerequisites: COS 253
This course covers advanced esthetic instructional concepts and
skills. Topics include practical demonstrations, lesson planning,
lecture techniques, development and administration of assessment
tools record keeping and other related topics. Upon completion,
students should be able to demonstrate competencies in the areas
covered by the Esthetics Instructor Licensing examination and meet
program requirements.

COS 271  Instructor Concepts I    5 0 0 0 5
Prerequisites: Cosmetology License and six months
experience as a licensed cosmetologist
Corequisites: COS 272
This course introduces the basic cosmetology instructional concepts.
Topics include orientation, theories of education, unit planning, daily
lesson planning, laboratory management, student assessment,
record keeping, and other related topics. Upon completion, students
should be able to identify theories of education, develop lesson plans, demonstrate supervisory techniques, and assess student
performance in a classroom setting.

COS 272  Instructor Practicum I    0 21 0 0 7
Prerequisites: Cosmetology License and six months
experience as a licensed cosmetologist
Corequisites: COS 271
This course covers supervisory and instructional skills for teaching
entry-level cosmetology students in a laboratory setting. Topics
include demonstrations of services, supervision, and entry-level
student assessment. Upon completion, students should be able to
demonstrate salon services and instruct and objectively assess the
entry-level student.

COS 273  Instructor Concepts II    5 0 0 0 5
Prerequisites: COS 271 and COS 272
Corequisites: COS 274
This course covers advanced cosmetology instructional concepts.
Topics include practical demonstrations, lesson planning, lecture
techniques, development and administration of assessment tools,
record keeping, and other related topics. Upon completion, students
should be able to develop lesson plans, demonstrate supervision
techniques, assess student performance in a classroom setting, and
keep accurate records.

COS 274  Instructor Practicum II    0 21 0 0 7
Prerequisites: COS 271 and COS 272
Corequisites: COS 273
This course is designed to develop supervisory and instructional skills
for teaching advanced cosmetology students in a laboratory setting.
Topics include practical demonstrations, supervision, and advanced
student assessment. Upon completion, students should be able to
demonstrate competence in the areas covered by the Instructor
Licensing Examination and meet program completion requirements.
This is a certificate-level course.

COMPUTER SCIENCE

CSC 134  C++ Programming    2 3 0 0 3
This course introduces computer programming using the C++
programming language with object-oriented programming principles.
Emphasis is placed on event-driven programming methods, including
creating and manipulating objects, classes, and using object-oriented
tools such as the class debugger. Upon completion, students should be
able to design, code, test and debug at a beginning level. This
course has been approved to satisfy the Comprehensive Articulation
Agreement for transferability as a pre-major and/or elective course
requirement. This course is also available through the Virtual
Learning Community (VLC).

CSC 151  JAVA Programming    2 3 0 0 3
This course introduces computer programming using the JAVA
programming language with object-oriented programming principles.
Emphasis is placed on event-driven programming methods, including
creating and manipulating objects, classes, and using object-oriented
tools such as the class debugger. This course has been approved to
satisfy the Comprehensive Articulation Agreement for transferability
as a pre-major and/or elective course requirement.

CSC 153  C# Programming    2 3 0 0 3
This course introduces computer programming using the C#
programming language with object-oriented programming principles.
Emphasis is placed on event-driven programming methods, including
creating and manipulating objects, classes, and using object-oriented
tools such as the class debugger. Upon completion, students should be
able to design, code, test, debug, and implement objects using the
appropriate environment at the beginning level.

CSC 234  Advanced C++    2 3 0 0 3
Prerequisites: CSC 134
This course is a continuation of CSC 134 using the C++ programming
language with standard programming principles. Emphasis is placed
on advanced arrays/tables, file management/processing techniques,
data structures, sub-programs, interactive processing, sort/merge
routines, and libraries. Upon completion, students should be able to
design, code, test, debug and document programming solutions.

CSC 251  Adv JAVA Programming    2 3 0 0 3
Prerequisites: CSC 151
This course is a continuation of CSC 151 using the JAVA
programming language with object-oriented programming principles.
Emphasis is placed on event-driven programming methods, including
creating and manipulating objects, classes, and using object-oriented
tools such as the class debugger. Upon completion, students should be
able to design, code, test, debug, and implement objects using the
appropriate environment.

CSC 289  Programming Capstone Project    1 4 0 0 3
Prerequisites: CTS 285
This course provides an opportunity to complete a significant
programming project from the design phase through implementation
with minimal instructor support. Emphasis is placed on project
definition, testing, presentation, and implementation. Upon
completion, students should be able to complete a project from the
definition phase through implementation.

COMPUTER INFORMATION TECHNOLOGY

CTS 120  Hardware/Software Support    2 3 0 0 3
Prerequisites: CIS 110 or CIS 111
This course covers the basic hardware of a personal computer,
including installation, operations and interactions with software.
Topics include component identification, memory-system, peripheral
installation and configuration, preventive maintenance, hardware
diagnostics/repair, installation and optimization of system software,
commercial programs, system configuration, and device-drivers.
Upon completion, students should be able to select appropriate
computer equipment and software, upgrade/maintain existing
equipment and software, and troubleshoot/repair non-functioning
personal computers.

CTS 125  Presentation Graphics    2 2 0 0 3
Prerequisites: CIS 110 or CIS 111
This course provides hands-on experience with a graphics
presentation package. Topics include terminology, effective chart
usage, design and layout, integrating hardware components, and
enabling presentations with text, graphics, audio and video. Upon completion, students should be able to design and demonstrate an effective presentation.

**CTS 130 Spreadsheet**  
Prerequisites: CIS 110 or CIS 111 or OST 137  
This course introduces basic spreadsheet design and development. Topics include writing formulas, using functions, enhancing spreadsheets, creating charts, and printing. Upon completion, students should be able to design and print basic spreadsheets and charts.

**CTS 155 Tech Support Functions**  
This course introduces a variety of diagnostic and instructional tools that are used to evaluate the performance of technical support technologies. Emphasis is placed on technical support management techniques and support technologies. Upon completion, students should be able to determine the best technologies to support and solve actual technical support problems.

**CTS 217 Computer Train/Support**  
This course introduces computer training and support techniques. Topics include methods of adult learning, training design, delivery, and evaluation, creating documentation, and user support methods. Upon completion, students should be able to design and implement training and provide continued support for computer users.

**CTS 285 Systems Analysis and Design**  
Prerequisites: CIS 115  
This course introduces established and evolving methodologies for the analysis, design, and development of an information system. Emphasis is placed on system characteristics, managing projects, prototyping, CASE/OOM tools, and systems development life cycle phases. Upon completion, students should be able to analyze a problem and design an appropriate solution using a combination of tools and techniques.

**CTS 289 System Support Project**  
Prerequisites: CTS 285  
This course provides an opportunity to complete a significant support project with minimal instructor assistance. Emphasis is placed on written and oral communication skills, project definition, documentation, installation, testing, presentation, and user training. Upon completion, students should be able to complete a project from the definition phase through implementation.

**DATABASE MANAGEMENT TECHNOLOGY**

**DBA 110 Database Concepts**  
This course introduces database design and creation using a DBMS product. Emphasis is placed on data dictionaries, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms.

**DBA 120 Database Programming I**  
This course is designed to develop SQL programming proficiency. Emphasis is placed on data definition, data manipulation, and data control statements as well as on report generation. Upon completion, students should be able to write programs which create, update, and produce reports.

**DRAFTING**

**DFT 151 CAD I**  
This course introduces CAD software as a drawing tool. Topics include drawing, editing, file management, and plotting. Upon completion, students should be able to produce and plot a CAD drawing. For online sections of this course, a computer capable of running Solidworks and Solidworks Student Design Kit software (included with the text) are required.

**DFT 154 Intro Solid Modeling**  
Prerequisites: DFT 154  
This course presents a continuation of basic three-dimensional solid modeling and design software. Topics include advanced study of parametric design, creation, editing, rendering and analysis of solid model assemblies, and multiview drawing generation. Upon completion, students should be able to use parametric design techniques to create and analyze the engineering design properties of a model assembly.

**DFT 170 Engineering Graphics**  
Prerequisites: DFT 154  
This course introduces basic engineering graphics skills and applications. Topics include sketching, selection and use of current methods and tools, and the use of engineering graphics applications. Upon completion, students should be able to demonstrate an understanding of basic engineering graphics principles and practices. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**DFT 254 Interme Solid Model/Render**  
Prerequisites: DFT 154  
This course provides a theoretical and applied introduction to the medium of readers theatre. Emphasis is placed on the group performance considerations posed by various genres of literature. Upon completion, students should be able to adapt and present a literary script following the conventions of readers theatre. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**DRAMA/THEATRE**

**DRA 111 Theatre Appreciation**  
This course provides a study of the art, craft, and business of the theatre. Emphasis is placed on the audience’s appreciation of the work of the playwright, director, actor, designer, producer, and critic. Upon completion, students should be able to analyze the medium of readers theatre and to recognize the contributions of various theatre artists. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**DRA 112 Literature of the Theatre**  
This course provides a survey of dramatic works from the classical Greek through the present. Emphasis is placed on the language of drama, critical theory, and background as well as on play reading and analysis. Upon completion, students should be able to articulate, orally and in writing, their appreciation and understanding of dramatic works. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**DRA 120 Voice for Performance**  
This course provides guided practice in the proper production of speech for the theatre. Emphasis is placed on improving speech, including breathing, articulation, pronunciation, and other variables. Upon completion, students should be able to demonstrate effective theatrical speech. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**DRA 124 Readers Theatre**  
This course provides a theoretical and applied introduction to the medium of readers theatre. Emphasis is placed on the group performance considerations posed by various genres of literature. Upon completion, students should be able to adapt and present a literary script following the conventions of readers theatre. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**DRA 130 Acting I**  
This course provides an applied study of the actor’s craft. Topics include role analysis, training the voice, and body concentration, discipline, and self-evaluation. Upon completion, students should be
able to explore their creativity in an acting ensemble. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 131 Acting II 0 6 0 0 3
Prerequisites: DRA 130
This course provides additional hands-on practice in the actor's craft. Emphasis is placed on further analysis, characterization, growth, and training for acting competence. Upon completion, students should be able to explore their creativity in an acting ensemble. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 140 Stagecraft I 0 6 0 0 3
This course introduces the theory and basic construction of stage scenery and properties. Topics include stage carpentry, scene painting, stage electronics, properties, and backstage organization. Upon completion, students should be able to pursue vocational and avocational roles in technical theatre. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 141 Stagecraft II 0 6 0 0 3
Prerequisites: DRA 140
This course provides additional hands-on practice in the elements of stagecraft. Emphasis is placed on the design and implementation of the arts and crafts of technical theatre. Upon completion, students should be able to pursue vocational and avocational roles in technical theatre. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 145 Stage Make-up 1 2 0 0 2
This course covers the research, design, selection of materials, and application of stage make-up, prosthetics, wigs, and hairpieces. Emphasis is placed on the development of techniques, style, and presentation of the finished make-up. Upon completion, students should be able to create and apply make-up, prosthetics, and hairpieces. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 170 Play Production I 0 9 0 0 3
This course provides an applied laboratory study of the processes involved in the production of a play. Topics include fundamental practices, principles, and techniques associated with producing plays of various styles. Upon completion, students should be able to participate in an assigned position with a college theatre production. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 171 Play Production II 0 9 0 0 3
Prerequisites: DRA 170
This course provides an applied laboratory study of the processes involved in the production of a play. Topics include fundamental practices, principles, and techniques associated with producing plays of various styles. Upon completion, students should be able to participate in an assigned position with a college theatre production. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 211 Theatre History I 3 0 0 0 3
This course covers the development of theatre from its origin to the closing of the British theatre in 1642. Topics include the history, aesthetics, and representative dramatic literature of the period. Upon completion, students should be able to trace the evolution of theatre and recognize the styles and types of world drama. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

DRA 212 Theatre History II 3 0 0 0 3
This course covers the development of theatre from 1660 through the diverse influences which shaped the theatre of the twentieth century. Topics include the history, aesthetics, and representative dramatic literature of the period. Upon completion, students should be able to trace the evolution of theatre and recognize the styles and types of world drama. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

DRA 270 Play Production III 0 9 0 0 3
Prerequisites: DRA 171
This course provides an applied laboratory study of the processes involved in the production of a play. Topics include fundamental practices, principles, and techniques associated with producing plays of various periods and styles. Upon completion, students should be able to participate in an assigned position with a college theatre production. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

DRA 271 Play Production IV 0 9 0 0 3
Prerequisites: DRA 270
This course provides an applied laboratory study of the processes involved in the production of a play. Topics include fundamental practices, principles, and techniques associated with producing plays of various periods and styles. Upon completion, students should be able to participate in an assigned position with a college theatre production. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

ECONOMICS
ECO 151 Survey of Economics 3 0 0 0 3
This course introduces basic concepts of micro- and macroeconomics. Topics include supply and demand, optimizing economic behavior, prices and wages, money, interest rates, banking system, unemployment, inflation, taxes, government spending, and international trade. Upon completion, students should be able to explain alternative solutions for economic problems faced by private and government sectors. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

ECO 251 Principles of Microeconomics 3 0 0 0 3
This course introduces economic analysis of individual, business, and industry choices in the market economy. Topics include the price mechanism, supply and demand, optimizing economic behavior, costs and revenue, market structures, factor markets, income distribution, market failure, and government intervention. Upon completion, students should be able to identify and evaluate consumer and business alternatives in order to efficiently achieve economic objectives. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

ECO 252 Principles of Macroeconomics 3 0 0 0 3
This course introduces economic analysis of aggregate employment, income, and prices. Topics include major schools of economic thought; aggregate supply and demand; economic measures, fluctuations, and growth; money and banking; stabilization techniques; and international trade. Upon completion, students should be able to evaluate national economic components, conditions, and alternatives for achieving socioeconomic goals. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.
EDU 119 Intro to Early Child Education 4 0 0 0 4
This course covers the foundations of the education profession, the diverse educational settings for young children, professionalism and planning developmentally appropriate programs for children. Topics include historical foundations, program types, career options, professionalism, and creating inclusive environments and curriculum that are responsive to the needs of children and families. Upon completion, students should be able design career plans and develop appropriate schedules, environments and activity plans appropriate for all children. This course is also available through the Virtual Learning Community (VLC).

EDU 131 Child, Family, and Community 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course covers the development of partnerships between culturally and linguistically diverse families, children, schools and communities. Emphasis is placed on developing skills and identifying benefits for establishing, supporting, and maintaining respectful, collaborative relationships between diverse families, programs/schools, and community agencies/resources. Upon completion, students should be able to explain appropriate relationships between families, educators, and professionals that enhance development and educational experiences of all children. This course is also available through the Virtual Learning Community (VLC).

EDU 144 Child Development I 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course includes the theories of child development, needs, milestones, and factors that influence development, from conception through approximately 36 months. Emphasis is placed on developmental sequences in physical/motor, emotional/social, cognitive, and language domains and the impact of multiple influences on development and learning. Upon completion, students should be able to compare/contrast typical/atypical developmental characteristics, explain environmental factors that impact development, and identify strategies for enhancing development. This course is also available through the Virtual Learning Community (VLC). This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

EDU 145 Child Development II 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course includes the theories of child development, needs, milestones, and factors that influence development, from preschool through middle childhood. Emphasis is placed on developmental sequences in physical/motor, emotional/social, cognitive, and language domains and the impact of multiple influences on development and learning. Upon completion, students should be able to compare/contrast typical/atypical developmental characteristics, explain environmental factors that impact development, and identify strategies for enhancing development. This course is also available through the Virtual Learning Community (VLC). This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

EDU 146 Child Guidance 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course introduces principles and practical techniques including the design of learning environments for providing developmentally appropriate guidance for all children, including those at risk. Emphasis is placed on observation skills, cultural influences, underlying causes of behavior, appropriate expectations, development of self-control and the role of communication and guidance. Upon completion, students should be able to demonstrate direct/indirect strategies for preventing problem behaviors, teaching appropriate/acceptable behaviors, negotiation, setting limits and recognizing at risk behaviors. This course is also available through the Virtual Learning Community (VLC). This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

EDU 151 Creative Activities 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course covers planning, creation and adaptation of developmentally supportive learning environments with attention to curriculum, interactions, teaching practices and learning materials. Emphasis is placed on creating and adapting integrated, meaningful, challenging and engaging developmentally supportive learning experiences in art, music, movement and dramatics for all children. Upon completion, students should be able to create, adapt, implement and evaluate developmentally supportive learning materials, experiences and environments. This course is also available through the Virtual Learning Community (VLC).

EDU 153 Health, Safety and Nutrition 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
Corequisite: Students are required to complete or show current certification in Infant & Child CPR and First Aid to pass this course.
This course covers promoting and maintaining the health and well-being of all children. Topics include health and nutritional guidelines, common childhood illnesses, maintaining safe and healthy learning environments, recognition and reporting of abuse and neglect and state regulations. Upon completion, students should be able to demonstrate knowledge of health, safety, and nutritional needs, safe learning environments, and adhere to state regulations. This course is also available through the Virtual Learning Community (VLC).

EDU 158 Healthy Lifestyles-Youth 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course introduces the topics of health, safety, nutrition, physical activities and environments for the school-age child/youth that promote development, fitness, and healthy lifestyles. Topics include the use of physical and nutritional/cooking activities (indoor/outdoor, teacher-directed/youth-directed) appropriate for youth developing typically/atypically; safe/healthy menu planning; safe/healthy environmental design, assessment and supervision. Upon completion, students should be able to plan/facilitate safe/healthy physical and nutritional/cooking activities, discuss safety policies/ regulations and identify health/safety/nutritional needs of youth.

EDU 161 Intro to Exceptional Children 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course covers children with exceptionalities as lifelong learners within the context of the community, school and family. Emphasis is placed on inclusion, legal, social/political, environmental, and cultural issues relating to the teaching of children with exceptionalities. Upon completion, students should be able to demonstrate knowledge of identification processes, inclusive techniques, and professional practices and attitudes. Topics include giftedness, identification, social/emotional development, curriculum differentiation, underachievement, and program development.

EDU 163 Classroom Mgt and Instruction 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course covers management and instructional techniques with school-age populations. Topics include classroom management and organization, teaching strategies, individual student differences and learning styles, and developmentally appropriate classroom guidance techniques. Upon completion, students should be able to utilize developmentally appropriate behavior management and instructional strategies that enhance the teaching/learning process and promote students’ academic success.

EDU 173 Becoming a Professional in ECE 3 0 0 0 3
Prerequisites: ENG 080 and RED 080
This course is an introduction to the early childhood profession. Emphasis is placed on the NAEYC Ethical Code, professional growth through involvement in professional organizations, and development of a professional portfolio. Upon completion, students should be able to identify professional resources and community partners in order to involve oneself in the early childhood field.
EDU 184  Early Childhood Intro Practicum  1  3  0  0  2
Prerequisites: ENG 080, RED 080 and EDU 119
This course introduces students to early childhood settings and applying skills in a three star (minimum) or NAEYC accredited or equivalent, quality early childhood environment. Emphasis is placed on observing children and assisting in the implementation of developmentally appropriate activities/environments for all children; and modeling reflective/professional practices. Upon completion, students should be able to demonstrate developmentally appropriate interactions with children and ethical/professional behaviors as indicated by assignments and on-site faculty visits.

EDU 216  Foundations of Education  4  0  0  0  4
Prerequisites: ENG 090 and RED 090
This course introduces the American educational system and the teaching profession. Topics include historical and philosophical foundations of education, contemporary educational, structural, legal, and financial issues, and experiences in public school classrooms. Upon completion, students should be able to relate classroom observations to the roles of teachers and schools and the process of teacher education. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement at select institutions only. This course is also available through the Virtual Learning Community (VLC).

EDU 220  Program Policies in Early Intervention  3  0  0  0  3
Prerequisites: Take one set
  Set 1: ENG 090, RED 090 and EDU 144
  Set 2: ENG 090, RED 090 and EDU 234
This course covers program policies, issues, legislation, and service delivery models included in early intervention. Emphasis is placed on trends and policies in early intervention relating to programs for infants and young children with disabilities, family roles, and research outcomes. Upon completion, students should be able to identify roles and responsibilities, describe the referral and placement options and explain the different service delivery models.

EDU 221  Children with Exceptionalities  3  0  0  0  3
Prerequisites: ENG 090, RED 090, EDU 144 and EDU 145
This course introduces children with exceptionalities, their families, support services, inclusive/diverse settings, and educational/family plans based on the foundations of child development. Emphasis is placed on the characteristics of exceptionalities, observation and assessment of children, strategies for adapting the learning environment, and identification of community resources. Upon completion, students should be able to recognize diverse abilities, describe the referral process, and depict collaboration with families/professionals to plan/implement, and promote best practice. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement at select institutions only. This course is also available through the Virtual Learning Community (VLC).

EDU 222  Learners w/Beh Disorders  3  0  0  0  3
Prerequisites: ENG 090, RED 090, EDU 144 and EDU 145
This course provides a comprehensive study of learners with behavioral disorders encompassing characteristics, assessments, placement alternatives, inclusion and family interventions. Topics include legislation, appropriate management interventions, and placement options for children with behavior disorders. Upon completion, students should be able to identify, develop, and utilize positive behavior support systems.

EDU 223  Specific Learning Disabilities  3  0  0  0  3
Prerequisites: ENG 090, RED 090, EDU 144 and EDU 145
This course provides a comprehensive study of characteristics, alternative assessments, teaching strategies, placement options, inclusion, and family intervention for children with specific learning disabilities. Topics include causes, assessment instruments, learning strategies, and collaborative/inclusion methods for children with specific learning disabilities. Upon completion, students should be able to assist in identifying, assessing, and providing educational interventions for children with specific learning disabilities and their families.

EDU 234  Infants, Toddlers and Twos  3  0  0  0  3
Prerequisites: ENG 090, RED 090 and EDU 119
Corequisite: EDU 234A
This course covers the unique needs and rapid changes that occur in the first three years of life and the inter-related factors that influence development. Emphasis is placed on recognizing and supporting developmental milestones through purposeful strategies, responsive care routines and identifying elements of quality, inclusive early care and education. Upon completion, students should be able to demonstrate respectful relationships that provide a foundation for healthy infant/toddler/twos development, plan/select activities/materials, and partner with diverse families.

EDU 234A Infants/Toddlers/Twos Lab  0  2  0  0  1
Prerequisites: Take one set
  Set 1: ENG 090 and RED 090 or Set 2: ENG 095
Corequisites: EDU 234
This course focuses on practical applications that support the healthy development of very young children by applying principles of quality inclusive early care and education. Emphasis is placed on recognizing the interrelated factors that impact children’s development through planning, evaluating and adapting quality environments, including activities and adult/child interactions. Upon completion, students should be able to demonstrate the ability to engage in respectful, responsive care that meets the unique needs of individual children/families.

EDU 235  School-Age Dev and Programs  3  0  0  0  3
Prerequisites: ENG 090 and RED 090
This course includes developmentally appropriate practices in group settings for school-age children. Emphasis is placed on principles of development, environmental planning, and positive guidance techniques. Upon completion, students should be able to discuss developmental principles for all children ages five to twelve and plan and implement developmentally-appropriate activities.

EDU 259  Curriculum Planning  3  0  0  0  3
Prerequisites: ENG 090, RED 090 and EDU 119
This course is designed to focus on curriculum planning for three to five year olds. Topics include philosophy, curriculum models, indoor and outdoor environments, scheduling, authentic assessment, and planning developmentally appropriate experiences. Upon completion, students should be able to evaluate children’s development, critique curriculum, plan for individual and group needs, and assess and create quality environments.

EDU 261  Early Childhood Administration I  3  0  0  0  3
Prerequisites: ENG 090, RED 090 and EDU 119
This course introduces principles of basic programming and staffing, budgeting/financial management and marketing, and rules and regulations of diverse early childhood programs. Topics include program structure and philosophy, standards of NC child care programs, finance, funding resources, and staff and organizational management. Upon completion, students should be able to develop components of program/personnel handbooks, a program budget, and demonstrate knowledge of fundamental marketing strategies and NC standards. This course is also available through the Virtual Learning Community (VLC).

EDU 262  Early Childhood Administration II  3  0  0  0  3
Prerequisites: ENG 090, RED 090, EDU 119 and EDU 261
This course focuses on advocacy/leadership, public relations/ community outreach and program quality/evaluation for diverse early childhood programs. Topics include program evaluation/accreditation, involvement in early childhood professional organizations, leadership/ mentoring, family, volunteer and community involvement and early childhood advocacy. Upon completion, students should be able to define and evaluate all components of early childhood programs,
develop strategies for advocacy and integrate community into programs. This course is also available through the Virtual Learning Community (VLC).

**EDU 263  School-Age Program Admin 2 0 0 0 2**

Prerequisites: ENG 090 and RED 090

This course introduces the methods and procedures for development and administration of school-age programs in the public or proprietary setting. Emphasis is placed on the construction and organization of the physical environment. Upon completion, students should be able to plan, develop and administer a quality school-age program.

**EDU 271  Educational Technology 2 2 0 0 3**

Prerequisites: ENG 090 and RED 090

This course introduces the use of technology to enhance teaching and learning in all educational settings. Topics include technology concepts, instructional strategies, materials and adaptive technology for children with exceptionalities, facilitation of assessment/evaluation, and ethical issues surrounding the use of technology. Upon completion, students should be able to apply technology enhanced instructional strategies, use a variety of technology resources and demonstrate appropriate technology skills in educational environments. This course is also available through the Virtual Learning Community (VLC).

**EDU 275  Effective Teach Train 2 0 0 0 2**

Prerequisites: ENG 090 and RED 090

This course provides specialized training using an experienced-based approach to learning. Topics include instructional preparation and presentation, student interaction, time management, learning expectations, evaluation, and curriculum principles and planning. Upon completion, students should be able to prepare and present a six-step lesson plan and demonstrate ways to improve student’s time-on-task.

**EDU 280  Lang and Literacy Experiences 3 0 0 0 3**

Prerequisites: ENG 090 and RED 090

This course is designed to expand students’ understanding of children’s language and literacy development and provides strategies for enhancing language/literacy experiences in an enriched environment. Topics include selection of diverse literature and interactive media, the integration of literacy concepts throughout the curriculum, appropriate observations/assessments and inclusive practices. Upon completion, students should be able to select, plan, implement and evaluate developmentally appropriate and diverse language/literacy experiences. This course is also available through the Virtual Learning Community (VLC).

**EDU 284  Early Child Capstone Practicum 1 9 0 0 4**

Prerequisites: ENG 090, RED 090, EDU 119, EDU 144, EDU 145, EDU 146 and EDU 151

This course is designed to allow students to apply skills in a three-star (minimum) or NAEYC accredited or equivalent, quality early childhood environment. Emphasis is placed on designing, implementing and evaluating developmentally appropriate activities and environments for all children; supporting/involving families; and modeling reflective and professional practices. Upon completion, students should be able to demonstrate developmentally appropriate plans/assessments, appropriate guidance techniques and ethical/professional behaviors as indicated by assignments and onsite faculty visits.

**EDU 285  Internship Exp-School-Age 1 9 0 0 4**

Prerequisites: ENG 090, RED 090, EDU 144, EDU 145, EDU 163 and EDU 216

This course is designed to allow students to apply skills in a quality public or private school environment. Emphasis is placed on designing, implementing and evaluating developmentally appropriate activities and environments for all children; supporting/involving families; and modeling reflective and professional practices. Upon completion, students should be able to demonstrate developmentally appropriate lesson plans/assessments, appropriate guidance techniques, ethical/professional behaviors as indicated by assignments and onsite faculty visits.

**EDU 289  Adv Issues/School-Age 2 0 0 0 2**

Prerequisites: ENG 090 and RED 090

This course covers advanced topics and issues that relate to school-age programs. Emphasis is placed on current advocacy issues, emerging technology, professional growth, ethics, and organizations for providers/teachers working with school-age populations. Upon completion, students should be able to list, discuss, and explain advanced current topics and issues surrounding school-aged populations.

**ENGINEERING**

**EGR 111  Engineer Comp and Careers 2 2 0 0 3**

This course introduces principles, fields of study, computational tools and techniques used in engineering and engineering technology. Topics include use of word processors, spreadsheets, databases, math editors, graphics and CAD packages, simulators, symbolic and numerical math solvers, and other related application software. Upon completion, students should be able to utilize computer applications in an engineering career.

**EGR 125  Appl Software for Tech 1 2 0 0 2**

This course introduces personal computer software and teaches students how to customize the software for technical applications. Emphasis is placed on the use of common office applications software programs such as spreadsheets, word processing, graphics, and internet access. Upon completion, students should be able to demonstrate competency in using applications software to solve technical problems and communicate the results in text and graphical formats.

**EGR 130  Engineering Cost Control 2 2 0 0 3**

Prerequisites: Take one: MAT 121, MAT 161, MAT 171, or MAT 175

This course covers the management of projects and systems through the control of costs. Topics include economic analysis of alternatives within budget constraints and utilization of the time value of money approach. Upon completion, students should be able to make choices that optimize profits on both short-term and long-term decisions.

**EGR 150  Intro to Engineering 1 2 0 0 2**

This course is an overview of the engineering profession. Topics include goal setting and career assessment, ethics, public safety, the engineering method and design process, written and oral communication, interpersonal skills and team building, and computer applications. Upon completion, students should be able to understand the engineering process, the engineering profession, and utilize college resources to meet their educational goals. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**EGR 250  Statics/Strength of Materials 4 3 0 0 5**

Prerequisites: MAT 121, MAT 161, MAT 171

This course includes vector analysis, equilibrium of force systems, friction, sectional properties, stress/strain, and deformation. Topics include resultants and components of forces, moments and couples, free-body diagrams, shear and moment diagrams, trusses, frames, beams, columns, connections, and combined stresses. Upon completion, students should be able to analyze simple structures.

**EGR 285  Design Project 0 4 0 0 2**

This course provides the opportunity to design an instructor-approved project using previously acquired skills. Emphasis is placed on selection, proposal, design, testing, and documentation of the approved project. Upon completion, students should be able to present and demonstrate projects.

**ENVIRONMENTAL HEALTH AND SAFETY**

**EHS 114  OSHA Regulations 4 0 0 0 4**

This course emphasizes application of OSHA performance-oriented standards for workplace safety and health. Topics include hazard communication, bloodborne pathogens, and the laboratory standard. Upon completion, students should be able to implement written plans required for compliance.
This course introduces management of hazardous materials and incidents. Topics include analysis and application of the Incident Command System from the discovery of a hazardous substance release to decontamination and termination procedures. Upon completion, students should be able to demonstrate an understanding of the roles and responsibilities of hazardous materials team members.

**ELECTRICITY**

**ELC 117 Motors and Controls**  
This course introduces the fundamental concepts of motors and motor controls. Topics include ladder diagrams, pilot devices, contractors, motor starters, motors, and other control devices. Upon completion, students should be able to properly select, connect, and troubleshoot motors and control circuits.

**ELC 128 Introduction to PLC**  
This course introduces the programmable logic controller (PLC) and its associated applications. Topics include ladder logic diagrams, input/output modules, power supplies, surge protection, selection/installation of controllers, and interfacing of controllers with equipment. Upon completion, students should be able to understand basic PLC systems and create simple programs.

**ELC 131 Circuit Analysis I**  
This course introduces DC and AC electricity with an emphasis on circuit analysis, measurements, and operation of test equipment. Topics include DC and AC principles, circuit analysis laws and theorems, components, test equipment operation, circuit simulation, and other related topics. Upon completion, students should be able to interpret circuit schematics; design, construct, verify, and analyze DC/AC circuits; and properly use test equipment.

**ELC 213 Instrumentation**  
This course covers the fundamentals of instrumentation used in industry. Emphasis is placed on electric, electronic, and other instruments. Upon completion, students should be able to install, maintain, and calibrate instrumentation.

**ELC 228 PLC Applications**  
This course covers programming and applications of programmable logic controllers. Emphasis is placed on programming techniques, networking, specialty I/O modules, and system troubleshooting. Upon completion, students should be able to specify, implement, and maintain complex PLC controlled systems.

**ELECTRONICS**

**ELN 131 Analog Electronics I**  
This course introduces the characteristics and applications of semiconductor devices and circuits. Emphasis is placed on analysis, selection, biasing, and applications. Upon completion, students should be able to construct, analyze, verify, and troubleshoot analog circuits using appropriate techniques and test equipment.

**ELN 132 Analog electronics II**  
This course covers additional applications of analog electronic circuits with an emphasis on analog and mixed signal integrated circuits (IC). Topics include amplification, filtering, oscillation, voltage regulation, and other analog circuits. Upon completion, students should be able to construct, analyze, verify, and troubleshoot analog electronic circuits using appropriate techniques and test equipment.

**ELN 133 Digital Electronics**  
This course covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, medium scale integration (MSI) and large scale integration (LSI) circuits, analog to digital (AD) and digital to analog (DA) conversion, and other related topics. Upon completion, students should be able to construct, analyze, verify, and troubleshoot digital circuits using appropriate techniques and test equipment.

**ELN 232 Intro to Microprocessors**  
This course introduces microprocessor architecture and microcomputer systems including memory and input/output interfacing. Topics include low-level language programming, bus architecture, I/O systems, memory systems, interrupts, and other related topics. Upon completion, students should be able to interpret, analyze, verify, and troubleshoot fundamental microprocessor circuits and programs using appropriate techniques and test equipment.

**ELN 234 Communication Systems**  
This course introduces the fundamentals of electronic communication systems. Topics include the frequency spectrum, electrical noise, modulation techniques, characteristics of transmitters and receivers, and digital communications. Upon completion, students should be able to interpret analog and digital communication circuit diagrams, analyze transmitter and receiver circuits, and use appropriate communication test equipment.

**EMERGENCY MEDICAL SCIENCE**

**EMS 110 EMT-Basic**  
This course introduces basic emergency medical care. Topics include preparatory, airway, patient assessment, medical emergencies, trauma, infants and children, and operations. Upon completion, students should be able to demonstrate the knowledge and skills necessary to achieve North Carolina State or National Registry EMT-Basic certification.

**EMS 120 Intermediate Intervention**  
Prerequisites: EMS 110  
Corequisites: EMS 121, EMS 130 and EMS 131  
This course is designed to provide the necessary information for interventions appropriate to the EMT-Intermediate and is required for intermediate certification. Topics include automated external defibrillation, basic cardiac electrophysiology, intravenous therapy, venipuncture, acid-base balance, and fluids and electrolytes. Upon completion, students should be able to properly establish an IV line, obtain venous blood, utilize AEDs, and correctly interpret arterial blood gases.

**EMS 121 EMS Clinical Practicum I**  
Prerequisites: EMS 110  
Corequisites: EMS 120, EMS 130 and EMS 131  
This course is the initial hospital and field internship and is required for intermediate and paramedic certification. Emphasis is placed on intermediate-level care. Upon completion, students should be able to demonstrate competence with intermediate-level skills.

**EMS 130 Pharmacology I for EMS**  
Prerequisites: EMS 110  
Corequisites: EMS 120 and EMS 131  
This course introduces the fundamental principles of pharmacology and medication administration and is required for intermediate and paramedic certification. Topics include terminology, pharmacokinetics, pharmacodynamics, weights, measures, drug calculations, legislation, and administration routes. Upon completion, students should be able to accurately calculate drug dosages, properly administer medications, and demonstrate general knowledge of pharmacology.

**EMS 131 Adv Airway Management**  
Prerequisites: EMS 110  
Corequisites: EMS 120 and EMS 130  
This course is designed to provide advanced airway management techniques and is required for intermediate and paramedic certification. Topics include respiratory anatomy and physiology, airway, ventilation, adjuncts, surgical intervention, and rapid sequence intubation. Upon completion, students should be able to properly utilize all airway adjuncts and pharmacology associated with airway control and maintenance.

**EMS 140 Rescue Scene Management**  
Prerequisites: EMS 140A  
Corequisites: EMS 140  
This course introduces rescue scene management and is required for paramedic certification. Topics include response to hazardous material conditions, medical incident command, and extrication of
patients from a variety of situations. Upon completion, students should be able to recognize and manage rescue operations based upon initial and follow-up scene assessment.

EMS 140A Rescue Scene Skills Lab 1 3 0 0 1
Corequisites: EMS 140
This course is designed to provide enhanced rescue scene skills for EMS providers. Emphasis is placed on advanced rescue scene evolutions including hazardous materials and major incident response. Upon completion, students should be able to demonstrate skills necessary to safely effect patients rescue in a variety of situations.

EMS 150 Emerg Vehicles & EMS Comm 1 3 0 0 2
This course examines the principles governing emergency vehicles, maintenance of emergency vehicles, and EMS communication equipment and is required for paramedic certification. Topics include applicable motor vehicle laws affecting emergency vehicle operation, defensive driving, collision avoidance techniques, communication systems, and information management systems. Upon completion, students should have a basic knowledge of emergency vehicles, maintenance, and communication needs.

EMS 210 Adv. Patient Assessment 1 3 0 0 2
Prerequisites: EMS 120, EMS 121, EMS 130, and EMS 131
This course covers advanced patient assessment techniques and is required for paramedic certification. Topics include initial assessment, medical-trauma history, field impression, complete physical exam process, on-going assessment, and documentation skills. Upon completion, students should be able to utilize basic communication skills and record and report collected patient data.

EMS 220 Cardiology 2 6 0 0 4
Prerequisites: EMS 120, EMS 130 and EMS 131
This course provides an in-depth study of cardiovascular emergencies and is required for paramedic certification. Topics include anatomy and physiology, pathophysiology, rhythm interpretation, cardiac pharmacology, and patient treatment. Upon completion, students should be able to certify at the Advanced Cardiac Life Support Provider level utilizing American Heart Association guidelines.

EMS 221 EMS Clinical Practicum II 0 0 9 0 3
Prerequisites: EMS 121
This course is a continuation of the hospital and field internship required for paramedic certification. Emphasis is placed on advanced-level care. Upon completion, students should be able to demonstrate continued progress in advanced-level patient care. This course is a continuation of the hospital and field internship required for paramedic certification. Emphasis is placed on advanced-level care. Upon completion, students should be able to demonstrate continued progress in advanced-level patient care.

EMS 231 EMS Clinical Pract III 0 0 9 0 3
Prerequisites: EMS 221
This course is a continuation of the hospital and field internship required for paramedic certification. Emphasis is placed on advanced-level care. Upon completion, students should be able to demonstrate continued progress in advanced-level patient care.

EMS 235 EMS Management 2 0 0 0 2
This course stresses the principles of managing a modern emergency medical service system. Topics include structure and function of municipal governments, EMS grantsmanship, finance, regulatory agencies, system management, legal issues, and other topics relevant to the EMS manager. Upon completion, students should be able to understand the principles of managing emergency medical service delivery systems.

EMS 240 Special Needs Patient 1 2 0 0 2
Prerequisites: EMS 120, EMS 121, EMS 130, and EMS 131
This course includes concepts of crisis intervention and techniques of dealing with special needs patients and is required for paramedic certification. Topics include behavioral emergencies, abuse, assault, challenged patients, personal well-being, home care, and psychotherapeutic pharmacology. Upon completion, students should be able to recognize and manage frequently encountered special needs patients.

EMS 241 EMS Clinical Practicum IV 0 0 9 0 3
Prerequisites: EMS 231
This course is a continuation of the hospital and field internship required for paramedic certification. Emphasis is placed on advanced-level care. Upon completion, students should be able to provide advanced-level patient care as an entry-level paramedic.

EMS 250 Adv Medical Emergencies 2 3 0 0 3
Prerequisites: EMS 120, EMS 121, EMS 130, and EMS 131
This course provides an in-depth study of medical conditions frequently encountered in the prehospital setting and is required for paramedic certification. Topics include pulmonology, neurology, endocrinology, anaphylaxis, gastroenterology, toxicology, and environmental emergencies integrating case presentation and emphasizing pharmacotherapeutics. Upon completion, students should be able to recognize and manage frequently encountered medical conditions based upon initial patient impression.

EMS 260 Adv Trauma Emergencies 1 3 0 0 2
Prerequisites: EMS 120, EMS 121, EMS 130, and EMS 131
This course provides in-depth study of trauma including pharmacological interventions for conditions frequently encountered in the prehospital setting and is required for paramedic certification. Topics include hemorrhage control, shock, burns, and trauma to head, spine, soft tissue, thoracic, abdominal, and musculoskeletal areas with case presentations utilized for special problems situations. Upon completion, students should be able to recognize and manage trauma situations based upon patient impressions and should meet requirements of BTLS or PHTLS courses.

EMS 270 Life Span Emergencies 2 2 0 0 3
Prerequisites: EMS 120, EMS 130 and EMS 131
This course, required for paramedic certification, covers medical/ethical/legal issues and the spectrum of age-specific emergencies from conception through death. Topics include gynecological, obstetrical, neonatal, pediatric, and geriatric emergencies and pharmacological therapeutics. Upon completion, students should be able to recognize and treat age-specific emergencies and certify at the Pediatric Advanced Life Support Provider level.

EMS 280 EMS Bridging Course 2 2 0 0 3
This course is designed to bridge the knowledge gained in a continuing education paramedic program with the knowledge gained in an EMS curriculum program. Topics include patient assessment, documentation, twelve-lead ECG analysis, thrombolytic agents, cardiac pacing, and advanced pharmacology. Upon completion, students should be able to perform advanced patient assessment documentation using the problem-oriented medical record format and manage complicated patients.

EMS 285 EMS Capstone 1 3 0 0 2
Prerequisites: EMS 220, EMS 250 and EMS 260
This course provides an opportunity to demonstrate problem-solving skills as a team leader in simulated patient scenarios and is required for paramedic certification. Emphasis is placed on critical thinking, integration of didactic and psychomotor skills, and effective performance in simulated emergency situations. Upon completion, students should be able to recognize and appropriately respond to a variety of EMS-related events.

ENGLISH AND READING, DEVELOPMENTAL

Initial student placement in developmental courses is based on individual college placement testing policies and procedures. Students should begin developmental course work at the appropriate level indicated by the College placement test (Accuplacer).
This course is designed to develop proficiency in specific integrated and contextualized reading and writing skills and strategies. Topics include reading and writing processes, critical thinking strategies, and recognition and composition of well-developed, coherent, and unified texts; these topics are primarily taught at the introductory level using texts primarily in a Lexile® range of 1070 to 1220. Upon completion, students should be able to demonstrate and apply those skills toward understanding a variety of academic and career-related texts and composing effective paragraphs.

**DRE 097 Integrated Reading Writing II**  
Prerequisites: DRE 096

This course is designed to develop proficiency in integrated and contextualized reading and writing skills and strategies. Topics include reading and writing processes, critical thinking strategies, and recognition and composition of well-developed, coherent, and unified texts; except where noted, these topics are taught at a reinforcement level using texts primarily in a Lexile® range of 1070 to 1220. Upon completion, students should be able to apply those skills toward understanding a variety of academic and career-related texts and composing effective paragraphs.

**DRE 098 Integrated Reading Writing III**  
Prerequisites: DRE 097

This course is designed to develop proficiency in integrated and contextualized reading and writing skills and strategies. Topics include reading and writing processes, critical thinking strategies, and recognition and composition of well-developed, coherent, and unified texts; these topics are taught using texts primarily in the Lexile® range of 1185 to 1385. Upon completion, students should be able to apply those skills toward understanding a variety of texts at the career and college ready level and toward composing a documented essay.

**DRE 099 Integrated Reading Writing III**  
Prerequisites: DRE 097  
Corequisites: ENG 111

This course is designed to develop proficiency in integrated and contextualized reading and writing skills and strategies by complementing, supporting and reinforcing material covered in ENG 111. Topics include reading and writing processes, critical thinking strategies, and recognition and composition of well-developed, coherent, and unified texts; except where noted, these topics are taught using texts primarily in the Lexile® range of 1185 to 1385. Upon completion, students should be able to apply those skills toward understanding a variety of texts at the career and college ready level and toward composing a documented essay.

**ENGLISH**

Initial student placement in developmental courses is based on individual college placement testing policies and procedures. Students should begin developmental course work at the appropriate level indicated by the College placement test (Accuplacer).

**ENG 080 Writing Foundations**  
Prerequisites: STAR Center referral or satisfactory pre-enrollment placement test scores

This course introduces the writing process and stresses effective sentences. Emphasis is placed on applying the conventions of written English, reflecting standard usage and mechanics in structuring a variety of sentences. Upon completion, students should be able to write correct sentences and a unified, coherent paragraph. This course does not satisfy the developmental reading and writing prerequisite for ENG 111. A student must earn a “C” or better to progress to the next class.

**ENG 090 Composition Strategies**  
Prerequisites: ENG 080

This course provides practice in the writing process and stresses effective paragraphs. Emphasis is placed on learning and applying the conventions of standard written English in developing paragraphs within the essay. Upon completion, students should be able to compose a variety of paragraphs and a unified, coherent essay. This course satisfies the developmental writing prerequisite for ENG 111. A student must earn a “C” or better to progress to the next class.

**ENG 102 Applied Communications II**  
Prerequisites: ENG 090 and RED 090  
Corequisites: ACA 115

This course is designed to enhance writing and speaking skills for the workplace. Emphasis is placed on generating short writings such as job application documents, memoranda, and reports and developing interpersonal communication skills with employees and the public. Upon completion, students should be able to prepare effective, short, and job-related written and oral communications. This is a diploma-level course.

**ENG 103 Literature-Based Research**  
Prerequisites: ENG 111

This course, the second in a series of two, expands the concepts developed in ENG 111 by focusing on writing that involves literature-based research and documentation. Emphasis is placed on critical reading and thinking and the analysis and interpretation of prose, poetry, and drama: plot, characterization, theme, cultural context, etc. Upon completion, students should be able to construct mechanically sound, documented essays and research papers that analyze and respond to literary works. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.

Note: The second level curriculum English (ENG 112, ENG 113, or ENG 114) should be carefully selected with input from the student faculty advisor to ensure proper program credit. This course should be selected based on the requirements of the student's program.

**ENG 111 Expository Writing**  
Prerequisites: ENG 090 and RED 090

This course is designed to develop proficiency in integrated and contextualized reading and writing skills and strategies. Topics include reading and writing processes, critical thinking strategies, and recognition and composition of well-developed, coherent, and unified texts; except where noted, these topics are taught using texts primarily in the Lexile® range of 1185 to 1385. Upon completion, students should be able to apply those skills toward understanding a variety of complex academic and career-related texts and composing effective paragraphs. These topics are taught using texts primarily in a Lexile® range of 1070 to 1220. Upon completion, students should be able to apply those skills toward understanding a variety of texts at the career and college ready level and toward composing a documented essay.

**ENG 112 Creative Writing I**  
Prerequisites: ENG 111

This course is designed to provide students with the opportunity to practice the art of creative writing. Emphasis is placed on writing, fiction, poetry, and sketches. Upon completion, students should be able to craft and critique their own writing and critique the writing of others. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.
ENG 126 Creative Writing II 3 0 0 0 3
Prerequisites: ENG 125
This course is designed as a workshop approach for advancing imaginative and literary skills. Emphasis is placed on the discussion of style, techniques, and challenges for first publications. Upon completion, students should be able to submit a piece of their writing for publication. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

ENG 231 American Literature I 3 0 0 0 3
Prerequisites: ENG 112, ENG 113, or ENG 114
This course covers selected works in American literature from its beginnings to 1865. Emphasis is placed on historical background, cultural context, and literary analysis of selected prose, poetry, and drama. Upon completion, students should be able to interpret, analyze, and respond to literary works in their historical and cultural contexts. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ENG 232 American Literature II 3 0 0 0 3
Prerequisites: ENG 112, ENG 113, or ENG 114
This course covers selected works in American literature from 1865 to the present. Emphasis is placed on historical background, cultural context, and literary analysis of selected prose, poetry, and drama. Upon completion, students should be able to interpret, analyze, and respond to literary works in their historical and cultural contexts. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ENV 214 Water Quality 3 2 0 0 4
This course examines the constituents of natural waters from a biological and geochemical perspective. Topics include common components of water, water sources, water law, health consequences, water treatment procedures, and the design of water treatment plants. Upon completion, students should be able to demonstrate an understanding of the biological, chemical, and geological factors affecting water quality.

ENV 222 Air Quality 3 2 0 0 4
Prerequisites: BIO 140, BIO 140A and CHM 131
This course introduces the study of air quality and air pollution. Emphasis is placed on air pollution basics, current atmospheric conditions, effects of air pollution, air quality analysis and measurement, and regulatory control of air pollution. Upon completion, students should be able to demonstrate an understanding of the environmental hazards associated with air pollution from a human health and welfare perspective.

ENV 252 Western World Literature II 3 0 0 0 3
Prerequisites: ENG 112, ENG 113, or ENG 114
This course provides a survey of selected European works from the Neoclassical period to the present. Emphasis is placed on historical background, cultural context, and literary analysis of selected prose, poetry, and drama. Upon completion, students should be able to interpret, analyze, and respond to selected works. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

ENV 262 World Literature II 3 0 0 0 3
Prerequisites: ENG 112, ENG 113, or ENG 114
This course introduces selected works from the Pacific, Asia, Africa, Europe, and the Americas from the eighteenth century to the present. Emphasis is placed on historical background, cultural context, and literary analysis of selected prose, poetry, and drama. Upon completion, students should be able to interpret, analyze, and respond to selected works. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.
field. Topics include history, evolution, statistics, suppression, organizations, careers, curriculum, and other related topics. Upon completion, students should be able to demonstrate a broad understanding of the fire protection field. This course is also available through the Virtual Learning Community (VLC).

FIP 124 Fire Prevention and Public Education 3 0 0 0 3
This course introduces fire prevention concepts as they relate to community and industrial operations. Topics include the development and maintenance of fire prevention programs, educational programs, and inspection programs. Upon completion, students should be able to research, develop, and present a fire safety program to a citizens or industrial group, meeting NFPA 1021. This course is also available through the Virtual Learning Community (VLC).

FIP 128 Detection and Investigation 3 0 0 0 3
This course covers procedures for determining the origin and cause of accidental and incendiary fires. Topics include collection and preservation of evidence, detection and determination of accelerants, courtroom procedure and testimony, and documentation of the fire scene. Upon completion, students should be able to conduct a competent fire investigation and present those findings to appropriate officials or equivalent, meeting NFPA 1021. This course is also available through the Virtual Learning Community (VLC).

FIP 132 Building Construction 3 0 0 0 3
This course covers the principles and practices related to various types of building construction, including residential and commercial, as impacted by fire conditions. Topics include types of construction and related elements, fire resistive aspects of construction materials, building codes, collapse, and other related topics. Upon completion, students should be able to understand and recognize various types of construction as related to fire conditions meeting NFPA 1021. This course is also available through the Virtual Learning Community (VLC).

FIP 136 Inspections and Codes 3 0 0 0 3
This course covers the fundamentals of fire and building codes and procedures to conduct an inspection. Topics include review of fire and building codes, writing inspection reports, identifying hazards, plan reviews, site sketches, and other related topics. Upon completion, students should be able to conduct a fire code compliance inspection and produce a written report, meeting NFPA 1021.

FIP 144 Sprinklers and Auto Alarms 2 0 0 0 2
This course introduces various types of automatic sprinklers, standpipes, and fire alarm systems. Topics include wet or dry systems, testing and maintenance, water supply requirements, fire detection and alarm systems, and other related topics. Upon completion, students should be able to demonstrate a working knowledge of various sprinkler and alarm systems and required inspection and maintenance.

FIP 152 Fire Protection Law 3 0 0 0 3
This course covers fire protection law. Topics include torts, legal terms, contracts, liability, review of case histories, and other related topics. Upon completion, students should be able to discuss laws, codes, and ordinances as they relate to fire protection. This course is also available through the Virtual Learning Community (VLC).

FIP 164 OSHA Standards 3 0 0 0 3
This course covers public and private sector OSHA work site requirements. Emphasis is placed on accident prevention and reporting, personal safety, machine operation, and hazardous material handling. Upon completion, students should be able to analyze and interpret specific OSHA regulations and write workplace policies designed to achieve compliance.

FIP 220 Firefighting Strategies 3 0 0 0 3
This course provides preparation for command of initial incident operations involving emergencies within both the public and private sector. Topics include incident management, fire-ground tactics and strategies, incident safety, and command/control of emergency operations. Upon completion, students should be able to describe the initial incident system related to operations involving various emergencies in fire/non-fire situations, meeting NFPA 1021. This course is also available through the Virtual Learning Community (VLC).

FIP 221 Advanced Firefighting Strategies 3 0 0 0 3
Prerequisites: FIP 220
This course covers command-level operations for multi-company/agency operations involving fire and non-fire emergencies. Topics include advanced ICS, advanced incident analysis, command-level fire operations, and control of both manmade and natural major disasters. Upon completion, students should be able to describe proper and accepted systems for the mitigation of emergencies at the level of overall scene command.

FIP 224 Instructional Methodology 4 0 0 0 4
This course covers the knowledge, skills, and abilities needed to train others in fire service operations. Topics include planning, presenting, and evaluating lesson plans, learning styles, use of media, communication, and other related topics. Upon completion, students should be able to meet all requirements of NFPA 1041 and NFPA 1021.

FIP 226 Fire Officer 1 & 2 4 0 0 0 4
(Pending Approval by the State Board of Community Colleges) This course covers the knowledge, skills, and requirements referenced in the National Fire Protection Association (NFPA) standard 1021 for Fire Officer I and II training. Topics include officer roles and responsibilities, budgets, fire cause determination, inspections, education, leadership, management, public relations, and other requirements included in the NFPA standard. Upon completion, students should be able to demonstrate an understanding of relevant NFPA standards as required for state Fire Officer I and II certification.

FIP 228 Local Government Finance 3 0 0 0 3
This course introduces local governmental financial principles and practices. Topics include budget preparation and justification, revenue policies, statutory requirements, taxation, audits, and the economic climate. Upon completion, students should be able to comprehend the importance of finance as it applies to the operation of a department.

FIP 230 Chemistry of Hazardous Materials 5 0 0 0 5
This course covers the evaluation of hazardous materials. Topics include use of the periodic table, hydrocarbon derivatives, placards and labels, parameters of combustion, and spill and leak mitigation. Upon completion, students should be able to demonstrate knowledge of the chemical behavior of hazardous materials.  

FIP 232 Hydraulics & Water Dist 2 0 0 0 2
Prerequisites: Take One: MAT 115, MAT 120, MAT 121, MAT 140, MAT 151, MAT 161, MAT 171, or MAT 175
This course covers the flow of fluids through fire hoses, nozzles, appliances, pumps, standpipes, water mains, and other devices. Emphasis is placed on supply and delivery systems, fire flow testing, hydraulic calculations, and other related topics. Upon completion, students should be able to perform hydraulic calculations, conduct water availability tests, and demonstrate knowledge of water distribution systems.

FIP 240 Fire Service Supervision 3 0 0 0 3
This course covers supervisory skills and practices in the fire service field. Topics include the supervisor’s job, supervision skills, the changing work environment, managing change, organizing for results, discipline and grievances, and safety. Upon completion, students should be able to demonstrate an understanding of the roles and responsibilities of the effective fire service supervisor, meeting elements of NFPA 1021.

FIP 248 Fire Service Personnel Administration 3 0 0 0 3
This course covers the basics of setting up and administering the personnel functions of fire protection organizations. Emphasis is placed on human resource planning, classification and job analysis, equal opportunity employment, affirmative action, recruitment, retention, development, performance evaluation, and assessment.
centers. Upon completion, students should be able to demonstrate knowledge of the personnel function as it relates to managing fire protection.

**FIP 256 Municipal Public Relations** 3 0 0 0 3
This course is a general survey of municipal public relations and their effect on the governmental process. Topics include principles of public relations, press releases, press conferences, public information officers, image surveys, and the effects of perceived service on fire protection delivery. Upon completion, students should be able to manage the public relations functions of a fire service organization, which meet elements of NFPA 1021 for Fire Officer I and II.

**FIP 260 Fire Protect Planning** 3 0 0 0 3
This course covers the need for a comprehensive approach to fire protection planning. Topics include the planning process, using an advisory committee, establishing goals and objectives, and techniques used to approve and implement a plan. Upon completion, students should be able to demonstrate a working knowledge of the concepts and principles of planning as it relates to fire protection.

**FIP 276 Managing Fire Service** 3 0 0 0 3
This course provides an overview of fire department operative services. Topics include finance, staffing, equipment, code enforcement, management information, specialized services, legal issues, planning, and other related topics. Upon completion, students should be able to understand concepts and apply fire department management and operations principles, meeting NFPA 1021.

**FIP 277 Fire and Social Behavior** 3 0 0 0 3
This course covers fire-related aspects of human behavior, with an emphasis on research and a systems approach to human-behavior analysis. Topics include identification of populations and structures at high risk, evaluation of systems models, and use of computer models to predict human behavior during fires. Upon completion, students should be able to identify and anticipate human behavior in response to various residential, commercial, board-and-care facility, and wildland/rural fire events.

**FRENCH**

**FRE 110 Introduction to French** 2 0 0 0 2
This course provides an introduction to understanding, speaking, reading, and writing French. Emphasis is placed on pronunciation, parts of speech, communicative phrases, culture, and skills for language acquisition. Upon completion, students should be able to identify and apply basic grammar concepts, display cultural awareness, and communicate in simple phrases in French.

**FRE 111 Elementary French I** 3 0 0 0 3
Prerequisites: High School French or FRE 110
Corequisites: FRE 181
This course introduces the fundamental elements of the French language within a cultural context. Emphasis is placed on the development of basic listening, speaking, reading, and writing skills. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written French and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**FRE 112 Elementary French II** 3 0 0 0 3
Prerequisites: FRE 111
Corequisites: FRE 182
This course is a continuation of FRE 111 focusing on the fundamental elements of the French language within a cultural context. Emphasis is placed on the progressive development of listening, speaking, reading, and writing skills. Upon completion, students should be able to comprehend and respond with increasing proficiency to spoken and written French and demonstrate further cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**FRE 141 Culture and Civilization** 3 0 0 0 3
This course, taught in English, provides an opportunity to explore issues related to the Francophone world. Topics include historical and current events, geography, and customs. Upon completion, students should be able to identify and discuss selected topics and cultural differences related to the Francophone world. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**FRE 151 Francophone Literature**
Prerequisites: ENG 111
This course, in English, includes selected readings by Francophone writers. Topics include fictional and non-fictional works by representative authors from a variety of genres and literary periods. Upon completion, students should be able to analyze and discuss selected texts within relevant cultural and historical contexts. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

**FRE 181 French Lab 1** 0 2 0 0 1
Corequisites: FRE 111
This course provides an opportunity to enhance acquisition of the fundamental elements of the French language. Emphasis is placed on the progressive development of basic listening, speaking, reading, and writing skills through the use of supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written French and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**FRE 182 French Lab 2** 0 2 0 0 1
Prerequisites: FRE 181
Corequisites: FRE 112
This course provides an opportunity to enhance acquisition of the fundamental elements of the French language. Emphasis is placed on the progressive development of basic listening, speaking, reading, and writing skills through the use of supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with increasing proficiency to spoken and written French and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**FRE 211 Intermediate French I** 3 0 0 0 3
Prerequisites: FRE 112
This course provides a review and expansion of the essential skills of the French language. Emphasis is placed on the study of authentic and representative literary and cultural texts. Upon completion, students should be able to communicate effectively, accurately, and creatively about the past, present, and future. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**FRE 212 Intermediate French II** 3 0 0 0 3
Prerequisites: FRE 211
This course is a continuation of FRE 211. Emphasis is placed on the continuing study of authentic and representative literary and cultural texts. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

**FRE 281 French Lab 3** 0 2 0 0 1
Prerequisites: FRE 182
This course provides an opportunity to enhance the review and expansion of the essential skills of the French language. Emphasis is placed on the study of authentic and representative literary and cultural texts through the use of supplementary learning media and materials. Upon completion, students should be able to communicate
effectively, accurately, and creatively about the past, present, and future. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

FRE 282 French Lab 4
Prerequisites: FRE 281
This course provides an opportunity to enhance the review and expansion of the essential skills of the French language. Emphasis is placed on the continuing study of authentic and representative literary and cultural texts through the use of supplementary learning media and materials. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

FILM AND VIDEO PRODUCTION
FVP 111 Introduction to Film and Video 2 3 0 0 3
This course is an overview of the film making process from conceptualization to execution and examines film genres in the context of history, theory, creativity, and commerce. Topics include the history of film and video in the US, technical terminology, relationships between various job categories, and the language of film. Upon completion, students should be able to demonstrate a film vocabulary and knowledge of working conditions in the film/video production field.

FVP 112 Art Dept. Operations I 1 4 0 0 3
This course introduces practical fabrication skills for wood and other materials required to build both props and sets from blueprints, photographs, or sketches. Emphasis is placed on the safe use of hand and power tools, and the skills required for collaborative efforts in set and prop construction. Upon completion, students should be able to demonstrate a working knowledge of the equipment and skills necessary to assist in constructing sets and props.

FVP 113 Grip and Electrical I 1 4 0 0 3
This course covers various grip/support packages used in different environments for studio and location. Topics include lighting units, hardware, stands, color media, and electrical theory with emphasis on safety. Upon completion, students should be able to execute basic grip and electrical directions given by the key grip, and/or gaffer.

FVP 114 Camera and Lighting I 2 3 0 0 3
This course covers the basic principles of video camera and recorder operations in professional formats, crew protocol and safety, and basic lighting theory and application. Emphasis is placed on terminology, the characteristics of light, basic lighting procedures, and proper procedures of field recording with video equipment. Upon completion, students should be able to demonstrate an understanding of the basic technical terms of camera operation, video recording and lighting equipment.

FVP 115 Camera and Lighting II 2 3 0 0 3
Prerequisites: FVP 114
This course offers advanced principles of video camera and recorder operations and introduces students to film formats and equipment as well as advanced lighting theory applications. Emphasis is placed on terminology, lighting for effect, and color correction. Upon completion, students should be able to demonstrate an understanding of camera terms and equipment, lighting theory and applications, and assist on studio and location shoots.

FVP 116 Sound Operations 2 3 0 0 3
This course provides an overview of sound theory, methods and technologies for location and studio recording, and hands-on work in location sound gathering. Emphasis is placed on terminology, protocol, cabling, trouble-shooting, mixing skills and safety aspects associated with hands-on work in sound gathering. Upon completion, students should be able to demonstrate an understanding of sound theory and terminology and assist professionals in sound gathering in both film and audio production.

FVP 120 Art Dept. Operations II 1 4 0 0 3
Prerequisites: FVP 112
This course provides a more in-depth coverage of the skills necessary to assist in the set construction, paint, set dressing, props and greens departments. Emphasis is placed on the skill range required for each craft including, but not limited to, plumbing, casting, wallpapering, furniture construction, upholstery, wiring and drapery. Upon completion, students should be able to assist in all fields related to the fabrication and decoration of sets and props.

FVP 130 Grip and Electrical II 1 4 0 0 3
Prerequisites: FVP 113
This course provides a more in-depth coverage of grip/support packages used in studio work and on location. Topics include advanced coverage of lighting, color media, and camera dollies, rigging, and electrical distribution with emphasis on safety issues. Upon completion, students should be able to execute grip and electrical directions given by the key grip, gaffer cinematographer and/or director of photography (DP).

FVP 212 Production Techniques I 1 12 0 0 5
This course provides experience working in a variety of crew positions with both student and professional productions and covers advanced film production concepts. Emphasis is placed on successful interaction with other advanced students and/or professionals as well as competency in advanced film production concepts. Upon completion, students should be able to demonstrate professional skills needed to pursue careers in the film and video industry.

FVP 213 Production Techniques II 1 12 0 0 5
Prerequisites: FVP 212
This course provides experience working in a variety of crew positions with both student and professional productions and covers advanced film production concepts. Emphasis is placed on successful interaction with other advanced students and/or professionals as well as competency in advanced film production concepts. Upon completion, students should be able to demonstrate professional skills needed to pursue careers in key positions in the film and video industry.

FVP 215 Production Management 2 3 0 0 3
Corequisites: FVP 238
This course emphasizes the activity of script breakdown in pre-production as well as the activities of the production office in both the production and post-production stages. Emphasis is placed on procedures, use of industry standard forms and software, as well as the functions and practices of the production office. Upon completion students should be able to demonstrate the people and technical skills necessary to assist above-the-line professionals in all types of film and video production.

FVP 220 Editing I 2 3 0 0 3
This course covers film and video editing from traditional methods to digital non-linear systems and basic film lab and transfer facility procedures. Topics include terminology, technologies, aesthetics, basic picture-only editing skills, and the editor's role augmented by hands-on experience. Upon completion, students should be able to use editing equipment and basic digitizing, logging, and picture-only editing skills.

FVP 221 Editing II 2 3 0 0 3
Prerequisites: FVP 220
This course covers editing in the digital environment, starting from the camera negative through the transfer, the non-linear digital edit and going back to negative matching. Topics include terminology, technologies, aesthetics, advanced sound and picture editing skills, and the editor's role augmented by hands-on experience. Upon completion students should be able to demonstrate proficiency in using editing equipment and sound and picture editing skills.

FVP 223 Postproduction Sound Design 1 4 0 0 3
Prerequisites:FVP 116 or FVP 220
This course covers audio postproduction recording, mixing, and editing techniques, technologies, and aesthetics for the development of a compelling soundtrack for film and video media. Topics include
using library effects, recording sound, effects and Foley to reinforce images and the story, preparing and mixing sound tracks for media productions. Upon completion students should be able to record, edit and mix sound design projects that strengthen narrative elements and perform critique of media sound design.

FVP 227 Multimedia Production 2 3 0 0 3
This course covers technical terms used in the multimedia industry and introduces skills related to digital manipulation of audio and video materials. Emphasis is placed on technical terms used in multimedia work and integration of sound, video, graphics, and text into a single production. Upon completion, students should be able to define technical terms in multimedia work and work with a variety of computer hardware and software.

FVP 238 Software Apps for FVP 2 3 0 0 3
This course introduces the use of industry standard computer software unique to the motion picture industry using personal computers. Emphasis is placed on hands-on work with budgeting and scheduling software and in facilitating the relationship between the technical crew and the script. Upon completion, students should be able to assist with script breakdown for budgeting and scheduling and work with that information in computer-based formats.

GOLF COURSE MANAGEMENT

GCM 220 Golf Course Maint Systems 3 0 0 0 3
This course provides a detailed study of the logistics of day-to-day maintenance programs for golf courses. Emphasis is placed on how such programs relate to the overall management of golf course facilities. Upon completion, students should be capable of setting up and operating maintenance programs at golf courses.

GEOGRAPHY

GEO 111 World Regional Geography 3 0 0 0 3
This course introduces the regional concept which emphasizes the spatial association of people and their environment. Emphasis is placed on the physical, cultural, and economic systems that interact to produce the distinct regions of the earth. Upon completion, students should be able to describe variations in physical and cultural features of a region and demonstrate an understanding of their functional relationships. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

GEOGRAPHICAL INFORMATION SYSTEMS

GIS 111 Introduction to GIS 2 2 0 0 3
This course introduces the hardware and software components of a Geographic Information System and reviews GIS applications. Topics include data structures and basic functions, methods of data capture and sources of data, and the nature and characteristics of spatial data and objects. Upon completion, students should be able to identify GIS hardware components, typical operations, products/applications, and differences between database models and between raster and vector systems.

HEAVY EQUIPMENT MAINTENANCE

HET 134 Diesel Fuel & Power Sys 2 3 0 0 3
This course introduces the principles of fuel injection and other power systems used in the heavy equipment industry including newer and cleaner technology. Emphasis is placed on test equipment, component functions, safety, and theories of older conventional and newer and cleaner Tier III and Tier IV fuel systems. Upon completion, students should be able to diagnose and service fuel systems and explain proper safety procedures on alternative fuel systems used in heavy equipment industry.

HISTORY

HIS 111 World Civilizations I 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course introduces world history from the dawn of civilization to the early modern era. Topics include Eurasian, African, American, and Greco-Roman civilizations and Christian, Islamic and Byzantine cultures. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in premodern world civilizations. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

HIS 112 World Civilizations II 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course introduces world history from the early modern era to the present. Topics include the cultures of Africa, Europe, India, China, Japan, and the Americas. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in modern world civilizations. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

HIS 131 American History I 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course is a survey of American history from pre-history through the Civil War era. Topics include industrialization, immigration, the Great Depression, the major American wars, the Cold War, and social conflict. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in American history since the Civil War. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

HIS 132 American History II 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course is a survey of American history from the Civil War era to the present. Topics include industrialization, immigration, the Great Depression, the major American wars, the Cold War, and social conflict. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in American history since the Civil War. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

HIS 231 Recent American History 3 0 0 0 3
This course is a study of American society from the post-Depression era to the present. Topics include World War II, the Cold War, social unrest, the Vietnam War, the Great Society, and current political trends. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in recent America. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

HIS 236 North Carolina History 3 0 0 0 3
This course is a study of geographical, political, economic, and social conditions existing in North Carolina from America’s discovery to the present. Topics include native and immigrant backgrounds; colonial, antebellum, and Reconstruction periods; party politics; race relations; and the transition from an agrarian to an industrial economy. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in North Carolina. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

HORTICULTURE

HOR 112 Landscape Design I 2 3 0 0 3
This course covers landscape principles and practices for residential and commercial sites. Emphasis is placed on drafting, site analysis, and common elements of good design, plant material selection,
and proper plant utilization (encouraged use of native plants and discouraged use of invasive species). Upon completion, students should be able to read plans and draft a landscape design according to sustainable practices.

HOR 114 Landscape Construction 2 2 0 0 3
This course introduces the design and fabrication of landscape structures/features. Emphasis is placed on safety, tool identification and use, material selection, construction techniques, and fabrication. Upon completion, students should be able to design and construct common landscape structures/features.

HOR 116 Landscape Management I 2 2 0 0 3
This course covers information and skills necessary to analyze a property and develop a management schedule. Emphasis is placed on property measurement, plant condition, analysis of client needs, and plant culture needs. Upon completion, students should be able to analyze a property, develop management schedules, and implement practices based on client needs.

HOR 118 Equipment Op & Maintenance 1 3 0 0 2
This course covers the proper operation and maintenance of selected equipment used in horticulture. Emphasis is placed on the maintenance, minor repairs, safety devices, and actual operation of selected equipment. Upon completion, students should be able to design a maintenance schedule, service equipment, and demonstrate safe operation of selected equipment.

HOR 124 Nursery Operations 2 3 0 0 3
This course covers nursery site and crop selection, cultural practices, and production and marketing methods. Topics include site considerations, water availability, equipment, irrigation, fertilization, containers, media, and pest control. Upon completion, students should be able to design and implement a nursery operation and grow and harvest nursery crops.

HOR 134 Greenhouse Operations 2 2 0 0 3
This course covers the principles and procedures involved in the operation and maintenance of greenhouse facilities. Emphasis is placed on the operation of greenhouse systems, including the environmental control, record keeping, scheduling, and production practices. Upon completion, students should be able to demonstrate the ability to operate greenhouse systems and facilities to produce greenhouse crops.

HOR 142 Fruit & Vegetable Prod 1 2 0 0 2
This course introduces the principles and techniques of growing fruits and field-grown vegetables. Topics include site selection, proper varietal selection, nutritional values, cultural techniques, harvesting and marketing, and insect and disease control. Upon completion, students should be able to demonstrate an understanding of the principles related to the production of selected fruits and vegetables.

HOR 152 Horticultural Practices 0 3 0 0 1
This course covers the maintenance of ornamental plantings and production areas. Topics include maintenance of flower beds, vegetable gardens, greenhouses, and container and field nursery stock using sound horticultural practices. Upon completion, students should be able to apply the principles and practices of maintaining ornamental landscape plantings.

HOR 154 Intro to Hort Therapy 2 4 0 0 4
This course introduces the concept of horticulture therapy and how it can be applied to improve human well-being. Emphasis is placed on developing a horticulture therapy program, planning activities, and adjusting activities based on the age, disability, or need of the individual. Upon completion, students should be able to develop project ideas, write lesson plans, and lead informal classes using horticulture therapy techniques.

HOR 160 Plant Materials I 2 2 0 0 3
This course covers identification, culture, characteristics, and use of plants. Emphasis is placed on nomenclature, identification, growth requirements, cultural requirements, soil preferences, and landscape applications. Upon completion, students should be able to demonstrate knowledge of the proper selection and utilization of plant materials.

HOR 162 Applied Plant Science 2 2 0 0 3
This course introduces the basic concepts of botany as they apply to horticulture. Topics include nomenclature, physiology, morphology, and anatomy as they apply to plant culture. Upon completion, students should be able to apply the basic principles of botany to horticulture.

HOR 164 Horticulture Pest Management 2 2 0 0 3
This course covers the identification and management of plant pests including insects, diseases, and weeds. Topics include pest identification and beneficial organisms, pesticide application safety and use of least toxic methods of management. Upon completion, students should be able to manage common landscape pests using least toxic methods of control and be prepared to sit for North Carolina Commercial Pesticide Ground Applicators license.

HOR 166 Soils and Fertilizers 2 2 0 0 3
This course covers the physical and chemical properties of soils and soil fertility and management. Topics include soil formation; classification; physical, chemical, and biological properties (including microorganisms); testing; and fertilizer application. Upon completion, students should be able to analyze, evaluate, and properly amend soils/media according to sustainable practices.

HOR 168 Plant Propagation 2 2 0 0 3
This course is a study of sexual and asexual reproduction of plants. Emphasis is placed on seed propagation, grafting, stem and root propagation, micro-propagation, and other propagation techniques. Upon completion, students should be able to successfully propagate ornamental plants.

HOR 213 Landscape Design II 2 2 0 0 3
Prerequisites: HOR 112
This course covers residential and commercial landscape design, cost analysis, and installation. Emphasis is placed on job cost estimates, installation of the landscape design, and maintenance techniques. Upon completion, students should be able to read landscape design blueprints, develop cost estimates, and implement the design.

HOR 215 Landscape Irrigation 2 2 0 0 3
This course introduces basic irrigation design, layout, and installation. Topics include site analysis, components of irrigation systems, types of irrigation systems, and installation techniques. Upon completion, students should be able to design and install basic landscape irrigation systems.

HOR 225 Nursery Production 2 2 0 0 3
This course covers all aspects of nursery crop production. Emphasis is placed on field production and covers soils, nutrition, irrigation, pest control, and harvesting. Upon completion, students should be able to produce a marketable nursery crop.

HOR 235 Greenhouse Production 2 2 0 0 3
This course covers the production of greenhouse crops. Emphasis is placed on product selection and production based on market needs and facility availability, including record keeping. Upon completion, students should be able to select and make production schedules to successfully produce greenhouse crops.

HOR 245 Hort Specialty Crops 2 2 0 0 3
This course introduces the techniques and requirements for the production of horticultural crops of special or local interest. Topics include development of a local market, proper varietal selection, cultural practices, site selection, and harvesting and marketing practices. Upon completion, students should be able to choose, grow, and market a horticultural crop of special or local interest.
This course covers the culture and maintenance of trees and shrubs. Topics include fertilization, pruning, approved climbing techniques, pest control, and equipment use and safety. Upon completion, students should be able to properly prune trees and shrubs and perform arboricultural practices.

**HOR 260 Plant Materials II** 2 2 0 0 3
This course covers important landscape plants. Emphasis is placed on identification, plant nomenclature, growth characteristics, culture requirements, and landscape uses. Upon completion, students should be able to demonstrate knowledge of the proper selection and utilization of plant materials.

**HOR 265 Adv Plant Materials** 1 2 0 0 2
This course covers important landscape plants. Emphasis is placed on identification, plant nomenclature, growth characteristics, cultural requirements, and landscape uses. Upon completion, students should be able to correctly select plants for specific landscape uses.

**HOR 271 Garden Center Management** 2 0 0 0 2
This course covers the retail marketing of gardening products and services through mass market and independent garden centers. Topics include garden center layout, customer relations, market choice, product lines, vendors, and the relationship with the broader horticultural community. Upon completion, students should be able to demonstrate an understanding of the principles and practices of the retail garden center.

**HOR 275 Hort Production Management** 3 2 0 0 4
This course introduces starting and/or managing a horticulture production operation. Emphasis is placed on types of horticulture production businesses, production management practices and skills, and appropriate safety measures for equipment, personnel, and facilities. Upon completion, students should be able to identify various types of production businesses, prepare appropriate schedules and inventories, and manage personnel/facilities for safe crop production.

**HUMANITIES**

**HUM 123 Appalachian Culture** 3 0 0 0 3
This course provides an interdisciplinary study of the unique features of Appalachian culture. Topics include historical, political, sociological, psychological, and artistic features which distinguish this region. Upon completion, students should be able to demonstrate a broad-based awareness and appreciation of Appalachian culture. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**HYDRAULICS**

**HYD 110 Hydraulics/Pneumatics I** 2 3 0 0 3
This course introduces the basic components and functions of hydraulic and pneumatic systems. Topics include standard symbols, pumps, control valves, control assemblies, actuators, FRL, maintenance procedures, and switching and control devices. Upon completion, students should be able to understand the operation of a fluid power system, including design, application, and troubleshooting.

**INTERPRETER PREPARATION**

**IPP 111 Intro to Interpretation** 3 0 0 0 3
This course provides an orientation to the field of interpreting, interpretation models, cognitive processes associated with interpretation, professional ethical standards, employment opportunities, and working conditions. Topics include specialized jargon, code of ethics, theories, interpreter assessments/qualifications, and protocol associated with various settings. Upon completion, students should be able to explain the rationale for placement of interpreters and apply ethical standards to a variety of working situations.

**IPP 112 Comparative Cultures** 3 0 0 0 3
This course introduces various cultural attributes and how they impact the consumers and the interpreting process. Topics include value systems of deaf and non-deaf individuals, enculturation stages, sociolinguistic continuum of language use within the deaf community, and cross-cultural management. Upon completion, students should be able to compare deaf and non-deaf cultures and discuss how attitudes impact communication interactions and interpreting.

**IPP 152 ASL/English Translation**

**Prerequisites:** IPP 152
This course provides a study of the component parts of a cultural scheme and the manner in which ASL and English differ. Emphasis is placed on analyzing, discussing, and translating basic ASL and English texts. Upon completion, students should be able to discuss and apply techniques of cross-cultural communication and translation between deaf and non-deaf communities.

**IPP 161 Consecutive Interpreting**

**Prerequisites:** IPP 152
This course introduces the process of ASL/English consecutive interpreting in a variety of interview, meeting, and small conference settings. Emphasis is placed on generating equivalent messages between ASL and English. Upon completion, students should be able to discuss and apply the principles of the protocol of consecutive interpreting.

**IPP 193 Selected Topics in Interpreter Ed**

**Prerequisites:** IPP 161
This course provides an opportunity to explore areas of current interest in specific program or discipline areas. Emphasis is placed on subject matter appropriate to the program or discipline. Upon completion, students should be able to demonstrate an understanding of the specific area of study.

**IPP 211 Simultaneous Interpret I**

**Prerequisites:** IPP 151
**Corequisites:** IPP 240
This course introduces simultaneous ASL/English interpreting through a variety of expository texts originating in-group, meeting, and conference settings. Emphasis is placed on analyzing expository texts, identifying registers, and applying principles of the protocol of interpreting. Upon completion, students should be able to apply the appropriate linguistic and/or cultural adjustments required to generate equivalent messages.

**IPP 240 Ethical Standards and Practices**

**Corequisites:** IPP 221
This course develops intellectual and ethical decision-making abilities and considers common ethical dilemmas that arise within the interpreting process. Topics include a model of ethical/intellectual development and the application of the model to interpreting practices. Upon completion, students should be able to discuss ethical resolution to various case studies and apply recognized principles of professional behavior to the interpreting process.

**IPP 243 Religious Interpreting**

**Prerequisites:** IPP 152
This course introduces various denominational philosophies to determine proper interpreting. Topics include ministries, music, sign selection, scriptural interpretation, denominational programming, environmental setup, employment opportunities, licensure and ethical standards. Upon completion, students should be able to apply knowledge of various denominations to produce ASL/English equivalent interpretation and follow guidelines of church and state.

**IPP 245 Educational Interpreting Issues**

**Prerequisites:** IPP 111
This course provides an overview of educational interpreting in the US and discusses recent trends in the education of deaf students. Topics include history of deaf education, current employment practices and requirements for educational interpreters. Upon completion, students should be able to discuss current issues, become familiar with evaluation practices, and apply professional/ethical standards to the interpreting role.
INDUSTRIAL SCIENCE

ISC 112  Industrial Safety  2 0 0 0 2
This course introduces the principles of industrial safety. Emphasis is placed on industrial safety and OSHA regulations. Upon completion, students should be able to demonstrate knowledge of a safe working environment and OSHA compliance.

ISC 132  Mfg Quality Control  2 3 0 0 3
This course introduces quality concepts and techniques used in industry. Topics include elementary statistics and probability, process control, process capability, and quality improvement tools. Upon completion, students should be able to demonstrate an understanding of the concepts and principles of quality and apply them to the work environment.

LIGHT DUTY DIESEL

LDD 112  Intro Light-Duty Diesel  2 2 0 0 3
This course covers the history, evolution, basic design and operational parameters for light-duty diesel (LDD) engines used in on-road applications. Topics include familiarization with the light-duty diesel, safety procedures, engine service and maintenance procedures, and introduction to combustion and emission chemistry. Upon completion, students should be able to describe the design and operation of the LDD, perform basic service operations, and demonstrate proper safety procedures.

LDD 116  Intro Diesel Electric-Drive  2 6 0 0 4
This course covers the theory and operation of electric-drive diesel vehicles. Topics include maintenance, diagnosis, repair and safety procedures for electrically propelled and hybrid diesel vehicles. Upon completion, students should be able to perform diagnostics, maintenance and repairs on electric and hybrid diesel vehicles.

LDD 181  LDD Fuel Systems  2 6 0 0 4
This course covers the light-duty diesel fuel delivery systems in on-road applications including hydraulic electronically controlled unit injectors, common-rail, mechanical pumps, and emerging technologies. Topics include diesel combustion theory, fuel system components, electronic and mechanical controls, and fuel types and chemistries that are common to the light-duty diesel engines. Upon completion, students should be able to demonstrate skills necessary to inspect, test, and replace fuel delivery components using appropriate service information and tools.

LDD 183  Air, Exh, Emissions  2 6 0 0 4
This course covers terminology, theory and operation of air induction and boost technologies, exhaust, and emission controls used in light-duty diesel engines. Topics include component identification, operation, diagnosis and repair of air delivery systems including turbochargers, diesel particulate filters and other exhaust catalysts. Upon completion, students should be able to demonstrate skills necessary to research service information, and inspect, test, and repair induction, boost, and after-treatment components.

LDD 284  LDD Test and Diagnosis  2 3 0 0 3
This course covers fundamentals of electronic engine management with an emphasis on diagnostic procedures and on-board diagnostic (OBD) systems in light-duty diesels. Topics include adaptive closed-loop controls, high-voltage injection systems, OBD fault detection, and government rules and regulations. Upon completion, students should be able to utilize diagnostic resources and equipment, identify and troubleshoot electronic malfunctions, and complete repairs on light-duty diesels.

LOW IMPACT DEVELOPMENT

LID 111  LID Design Principles  2 3 0 0 3
This course introduces design principles of Low Impact Development (LID) which incorporate sustainable development and natural resources management as an alternative to traditional site design. Topics include science-based interdisciplinary design practices including tools from civil and environmental engineering, hydrology, horticulture, ecology, and architecture. Upon completion, students should be able to use multifaceted approaches to recommend site-specific LID design concepts for residential, public, and commercial sites.

MACHINING

MAC 111  Machining Technology I  2 12 0 0 6
This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, drilling machines, saws, milling machines, bench grinders, and layout instruments. Upon completion, students should be able to safely perform the basic operations of measuring, layout, drilling, sawing, turning, and milling.

MAC 112  Machining Technology II  2 12 0 0 6
This course provides additional instruction and practice in the use of precision measuring tools, lathes, milling machines, and grinders. Emphasis is placed on setup and operation of machine tools including the selection and use of work holding devices, speeds, feeds, cutting tools, and coolants. Upon completion, students should be able to perform basic procedures on precision grinders and advanced operations of measuring, layout, drilling, sawing, turning, and milling.

MAC 121  Intro to CNC  2 0 0 0 2
This course introduces the concepts and capabilities of computer numerical control machine tools. Topics include setup, operation, and basic applications. Upon completion, students should be able to explain operator safety, machine protection, data input, program preparation, and program storage.

MAC 122  CNC Turning  1 3 0 0 2
This course introduces the programming, setup, and operation of CNC turning centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC turning centers.

MAC 124  CNC Milling  1 3 0 0 2
This course introduces the manual programming, setup, and operation of CNC machining centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC machining centers.

MAC 151  Machining Calculations  1 2 0 0 2
This course introduces basic calculations as they relate to machining occupations. Emphasis is placed on basic calculations and their applications in the machine shop. Upon completion, students should be able to perform basic shop calculations.

MAC 152  Adv Machining Calc  1 2 0 0 2
This course combines mathematical functions with practical machine shop applications and problems. Emphasis is placed on gear ratios, lead screws, indexing problems, and their applications in the machine shop. Upon completion, students should be able to calculate solutions to machining problems.

MAC 222  Advanced CNC Turning  1 3 0 0 2
This course covers advanced methods in setup and operation of CNC turning centers. Emphasis is placed on programming and production of complex parts. Upon completion, students should be able to demonstrate skills in programming, operations, and setup of CNC turning centers.

MAC 224  Advanced CNC Milling  1 3 0 0 2
This course covers advanced methods in setup and operation of CNC machining centers. Emphasis is placed on programming and production of complex parts. Upon completion, students should be able to demonstrate skills in programming, operations, and setup of CNC machining centers.
This course covers product planning and control and scheduling and routing of operations. Topics include cost-effective production methods, dimensional and statistical quality control, and the tooling and machines required for production. Upon completion, students should be able to plan, set up, and produce cost-effective quality machined parts.

MATHEMATICS, DEVELOPMENTAL

Initial student placement in developmental courses is based on individual college placement testing policies and procedures. Students should begin developmental course work at the appropriate level indicated by that college placement test. Due to pending changes in developmental courses contact your advisor for information on courses you may need to take.

DMA 010  Operations With Integers  .75 .5 0 0 1
This course provides a conceptual study of integers and integer operations. Topics include integers, absolute value, exponents, square roots, perimeter and area of basic geometric figures, Pythagorean theorem, and use of the correct order of operations. Upon completion, students should be able to demonstrate an understanding of pertinent concepts and principles and apply this knowledge in the evaluation of expressions.

DMA 020  Fractions and Decimals  .75 .5 0 0 1
Prerequisites: DMA 010
This course provides a conceptual study of the relationship between fractions and decimals and covers related problems. Topics include application of operations and solving contextual application problems, including determining the circumference and area of circles with the concept of pi. Upon completion, students should be able to demonstrate an understanding of the connections between fractions and decimals.

DMA 030  Propor/Ratio/Rate/Percent  .75 .5 0 0 1
Prerequisites: DMA 010 and DMA 020
This course provides a conceptual study of the problems that are represented by rates, ratios, percent, and proportions. Topics include rates, ratios, percent, proportion, conversion of English and metric units, and applications of the geometry of similar triangles. Upon completion, students should be able to use their understanding to solve conceptual application problems.

DMA 040  Express/Lin Equat/inequal  .75 .5 0 0 1
Prerequisites: Take one set:
Set 1: DMA 010, DMA 020 and DMA 030
Set 2: MAT 060
This course provides a conceptual study of problems involving linear expressions, equations, and inequalities. Emphasis is placed on solving contextual application problems. Upon completion, students should be able to distinguish between simplifying expressions and solving equations and apply this knowledge to problems involving linear expressions, equations, and inequalities.

DMA 050  Graphs/Equations of Lines  .75 .5 0 0 1
Prerequisites: Take one set:
Set 1: DMA 010, DMA 020, DMA 030 and DMA 040
Set 2: DMA 040 and MAT 060
This course provides a conceptual study of problems involving graphic and algebraic representations of lines. Topics include slope, equations of lines, interpretation of basic graphs, and linear modeling. Upon completion, students should be able to solve contextual application problems and represent real-world situations as linear equations in two variables.

DMA 060  Polynomial/Quadratic Appl  .75 .5 0 0 1
Prerequisites: Take one set:
Set 1: DMA 010, DMA 020, DMA 030, DMA 040 and DMA 050
Set 2: DMA 040, DMA 050 and MAT 060
Set 3: MAT 060 and MAT 070
This course provides a conceptual study of problems involving graphic and algebraic representations of quadratics. Topics include basic polynomial operations, factoring polynomials, and solving polynomial equations by means of factoring. Upon completion, students should be able to find algebraic solutions to contextual problems with quadratic applications.

DMA 070  Rational Express/Equation  .75 .5 0 0 1
Prerequisites: Take one set:
Set 1: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050 and DMA 060
Set 2: DMA 040, DMA 050, DMA 060 and MAT 060
Set 3: DMA 060, MAT 060 and MAT 070
Set 4: DMA 010, DMA 020, DMA 030, DMA 060 and MAT 070
This course provides a conceptual study of problems involving graphic and algebraic representations of rational equations. Topics include simplifying and performing operations with rational expressions and equations, understanding the domain, and determining the reasonableness of an answer. Upon completion, students should be able to find algebraic solutions to contextual problems with rational applications.

DMA 080  Radical Express/Equations  .75 .5 0 0 1
Prerequisites: Take one set:
Set 1: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050 and DMA 060
Set 2: DMA 040, DMA 050, DMA 060 and MAT 060
Set 3: DMA 060, MAT 060 and MAT 070
Set 4: DMA 010, DMA 020, DMA 030, DMA 060, MAT 060, and MAT 070
This course provides a conceptual study of the manipulation of radicals and the application of radical equations to real-world problems. Topics include simplifying and performing operations with radical expressions and rational exponents, solving equations, and determining the reasonableness of an answer. Upon completion, students should be able to find algebraic solutions to contextual problems with radical applications.

MATHEMATICS

MAT 101  Applied Mathematics I  2 2 0 0 3
Prerequisites: DMA 010-030
This course is a comprehensive review of arithmetic with basic algebra designed to meet the needs of certificate and diploma programs. Topics include arithmetic and geometric skills used in measurement, ratio and proportion, exponents and roots, applications of percent, linear equations, formulas, and statistics. Upon completion, students should be able to solve practical problems in their specific areas of study. This course is intended for diploma programs.

MAT 110  Mathematical Measurement  2 2 0 0 3
Prerequisites: DMA 010-030
This course provides an activity-based approach to utilizing, interpreting, and communicating data in a variety of measurement systems. Topics include accuracy, precision, conversion, and estimation within metric, apothecary, and avoirdupois systems; ratio and proportion; measures of central tendency and dispersion; and charting of data. Upon completion, students should be able to apply proper techniques to gathering, recording, manipulating, analyzing, and communicating data.
### MAT 121  Algebra and Trigonometry I  \(2 \ 2 \ 0 \ 0 \ 3\)
**Prerequisites:** DMA 010-050
This course provides an integrated approach to technology and the skills required to manipulate, display, and interpret mathematical functions and formulas used in problem solving. Topics include simplification, evaluation, and solving of algebraic and radical functions; complex numbers; right triangle trigonometry; systems of equations; and the use of technology. Upon completion, students should be able to demonstrate an understanding of the use of mathematics and technology to solve problems and analyze and communicate results.

### MAT 122  Algebra/Trigonometry II  \(2 \ 2 \ 0 \ 0 \ 3\)
**Prerequisites:** MAT 121, MAT 161, MAT 171, or MAT 175
This course extends the concepts covered in MAT 121 to include additional topics in algebra, function analysis, and trigonometry. Topics include exponential and logarithmic functions, translation and scaling of functions, Sine Law, Cosine Law, vectors, and statistics. Upon completion, students should be able to demonstrate an understanding of the use of technology to solve problems and to analyze and communicate results.

### MAT 140  Survey of Mathematics  \(3 \ 0 \ 0 \ 0 \ 3\)
**Prerequisites:** DMA 010-040
**Corequisites:** MAT 140A (same section must be taken with MAT 140)
This course provides an introduction in a non-technical setting to selected topics in mathematics. Topics include, but are not limited to, sets, logic, probability, statistics, matrices, mathematical systems, geometry, topology, mathematics of finance, and modeling. Upon completion, students should be able to understand a variety of mathematical applications, think logically, and be able to work collaboratively and independently. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

### MAT 140A  Survey of Mathematics Lab  \(0 \ 2 \ 0 \ 0 \ 1\)
**Prerequisites:** DMA 010-040
**Corequisites:** MAT 140 (same section must be taken with MAT 140A)
This course is a laboratory for MAT 140. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. This course must be taken simultaneously with MAT 140.

### MAT 151  Statistics I  \(3 \ 0 \ 0 \ 0 \ 3\)
**Prerequisites:** DMA 010-050, MAT 120, MAT 121, MAT 140, MAT 161, MAT 171, or MAT 175
**Corequisites:** MAT 151A (same section must be taken with MAT 151)
This course provides a project-based approach to the study of basic probability, descriptive and inferential statistics, and decision-making. Emphasis is placed on measures of central tendency and dispersion, correlation, regression, discrete and continuous probability distributions, quality control, population parameter estimation, and hypothesis testing. Upon completion, students should be able to describe important characteristics of a set of data and draw inferences about a population from sample data. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

### MAT 151A  Statistics I Lab  \(0 \ 2 \ 0 \ 0 \ 1\)
**Prerequisites:** DMA 010-050, MAT 120, MAT 121, MAT 140, MAT 161, MAT 171, or MAT 175
**Corequisites:** MAT 151 (same section must be taken with MAT 151A)
This course is a laboratory for MAT 151. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. This course must be taken simultaneously with MAT 151.

### MAT 155  Statistical Analysis  \(3 \ 0 \ 0 \ 0 \ 3\)
**Prerequisites:** DMA 010-050, MAT 120, MAT 121, MAT 161, MAT 171, or MAT 175
**Corequisites:** MAT 155A (same section must be taken with MAT 155)
This course is an introduction to descriptive and inferential statistics. Topics include sampling, distributions, plotting data, central tendency, dispersion, Central Limits Theorem, confidence intervals, hypothesis testing, correlations, regressions, and multinomial experiments. Upon completion, students should be able to describe data and test inferences about populations using sample data. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics (Quantitative Option).

### MAT 155A  Statistics Analysis Lab  \(0 \ 2 \ 0 \ 0 \ 1\)
**Prerequisites:** DMA 010-050, MAT 120, MAT 121, MAT 161, MAT 171, or MAT 175
**Corequisites:** MAT 155 (same section must be taken with MAT 155A)
This course is a laboratory for MAT 155. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

### MAT 161  College Algebra  \(3 \ 0 \ 0 \ 0 \ 3\)
**Prerequisites:** DMA 010-080
**Corequisites:** MAT 161A (same section must be taken with MAT 161)
This course provides an integrated technological approach to algebraic topics used in problem solving. Emphasis is placed on applications involving equations and inequalities; polynomial, rational, exponential and logarithmic functions; and graphing and data analysis/modeling. Upon completion, students should be able to choose an appropriate model to fit a data set and use the model for analysis and prediction. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics for the Associate in Arts Degree.

### MAT 161A  College Algebra Lab  \(0 \ 2 \ 0 \ 0 \ 1\)
**Prerequisites:** DMA 010-080
**Corequisites:** MAT 161 (same section must be taken with MAT 161A)
This course extends the concepts covered in MAT 121 to include additional topics in algebra, function analysis, and trigonometry. Upon completion, students should be able to manipulate, display, and interpret mathematical functions and formulas used in problem solving. Topics include simplification, evaluation, and solving of algebraic and radical functions; complex numbers; right triangle trigonometry; systems of equations; and the use of technology. Upon completion, students should be able to demonstrate an understanding of the use of mathematics and technology to solve problems and analyze and communicate results.

### MAT 165  Finite Mathematics  \(3 \ 0 \ 0 \ 0 \ 3\)
**Prerequisites:** MAT 161, MAT 171, or MAT 175
This course provides topics used to formulate models and to solve and interpret solutions using an algorithmic approach. Topics include linear algebra, linear programming, simplex method, sets and counting, probability, mathematics of finance, and logic. Upon completion, students should be able to demonstrate both an understanding of the theoretical concepts of finite mathematics and the ability to solve related problems. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.
MAT 165A Finite Math Lab  
Prerequisites: MAT 161, MAT 171, or MAT 175  
Corequisites: MAT 165  
This course is a laboratory for MAT 165. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively.

MAT 171 Pre-Calculus Algebra  
Prerequisites: DMA 010-080, or MAT 161  
Corequisites: MAT 171A (same section must be taken with MAT 171)  
This is the first of two courses designed to emphasize topics which are fundamental to the study of calculus. Emphasis is placed on equations and inequalities, functions (linear, polynomial, rational), systems of equations and inequalities, and parametric equations. Upon completion, students should be able to solve practical problems and use appropriate models for analysis and predictions. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

MAT 171A Pre-Calculus Algebra Lab  
Prerequisites: DMA 010-080, or MAT 161  
Corequisites: MAT 171 (same section must be taken with MAT 171A)  
This course is a laboratory for MAT 171. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. This course must be taken simultaneously with MAT 171.

MAT 172 Pre-Calculus Trigonometry  
Prerequisites: MAT 171  
Corequisites: MAT 172A (same section must be taken with MAT 172)  
This is the second of two courses designed to emphasize topics which are fundamental to the study of calculus. Emphasis is placed on properties and applications of transcendental functions and their graphs, right and oblique triangle trigonometry, conic sections, vectors and polar coordinates. Upon completion, students should be able to solve practical problems and use appropriate models for analysis and prediction. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

MAT 172A Pre-Calculus Trig Lab  
Prerequisites: MAT 171  
Corequisites: MAT 172 (same section must be taken with MAT 172A)  
This course is a laboratory for MAT 172. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. This course must be taken simultaneously with MAT 172.

MAT 175 Pre-Calculus  
Corequisites: MAT 175A (same section must be taken with MAT 175)  
This course provides an intense study of the topics which are fundamental to the study of calculus. Emphasis is placed on functions and their graphs with special attention to polynomial, rational, exponential, logarithmic and trigonometric functions, and analytic trigonometry. Upon completion, students should be able to solve practical problems and use appropriate models for analysis and prediction. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

MAT 175A Pre-Calculus Lab  
Corequisites: MAT 175 (same section must be taken with MAT 175A)  
This course is a laboratory for MAT 175. Emphasis is placed on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. This course must be taken simultaneously with MAT 175.

MAT 271 Calculus I  
Prerequisites: MAT 172 or MAT 175  
This course covers in depth the differential calculus portion of a three-course calculus sequence. Topics include limits, continuity, derivatives, and integrals of algebraic and transcendental functions of one variable, with applications. Upon completion, students should be able to apply differentiation and integration techniques to algebraic and transcendental functions. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

MAT 272 Calculus II  
Prerequisites: MAT 271  
This course provides a rigorous treatment of integration and is the second calculus course in a three-course sequence. Topics include applications of definite integrals, techniques of integration, indeterminate forms, improper integrals, infinite series, conic sections, parametric equations, polar coordinates, and differential equations. Upon completion, students should be able to use integration and approximation techniques to solve application problems. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

MECHANICAL

MEC 110 Intro to CAD/CAM  
1 2 0 0 2  
This course introduces CAD/CAM. Emphasis is placed on transferring part geometry from CAD to CAM for the development of a CNC-ready program. Upon completion, students should be able to use CAD/CAM software to produce a CNC program.

MEC 111 Machine Processes I  
1 4 0 0 3  
This course introduces safety, hand tools, machine processes, measuring instruments, and the operation of machine shop equipment. Topics include use and care of tools, safety, measuring tools, and the basic setup and operation of common machine tools. Upon completion, students should be able to safely machine simple parts to specified tolerances.

MEC 130 Mechanisms  
2 2 0 0 3  
This course introduces the purpose and action of various mechanical devices. Topics include cams, cables, gear trains, differentials, screws, belts, pulleys, shafts, levers, lubricants, and other devices. Upon completion, students should be able to analyze, maintain, and troubleshoot the components of mechanical systems.

MEC 145 Mfg Materials I  
2 3 0 0 3  
This course introduces a variety of manufacturing materials and common processing techniques. Emphasis is placed on the processing, testing, and application of materials such as wood, metals, plastics, ceramics, and composites. Upon completion, students should be able to demonstrate an understanding of fundamental engineering applications for a variety of materials, including their process capabilities and limitations.

MEC 155 Env Benign Manufacturing  
2 2 0 0 3  
This course introduces environmental issues involving the generation and management of hazardous materials and wastes in manufacturing operations. Topics include the analysis of manufacturing trends, pollution minimization strategies, and the advantages of incorporating a sustainable approach to manufacturing. Upon completion, students should be able to discuss analysis and
modification of industrial processes in manufacturing facilities toward a sustainable end.

MEC 180  Engineering Materials  2 3 0 0 3
This course introduces the physical and mechanical properties of materials. Topics include materials testing, pre and post-manufacturing processes, and material selection of ferrous and non-ferrous metals, plastics, composites, and non-conventional materials. Upon completion, students should be able to utilize basic material property tests and select appropriate materials for applications.

MEC 260  Fund of Machine Design  2 3 0 0 3
This course introduces the fundamental principles of machine design. Topics include simple analysis of forces, moments, stresses, strains, friction, kinematics, and other considerations for designing machine elements. Upon completion, students should be able to analyze machine components and make component selections from manufacturers’ catalogs.

MEC 276  Capstone Design Project  0 3 0 0 1
This course provides an opportunity for students to utilize all facets of their educational experience to solve an engineering design problem in a multi-disciplinary environment. Topics include project planning and organization, engineering analysis and design, selection of materials and processes, economic analysis, communication, and project documentation. Upon completion, students should be able to demonstrate the ability to complete a comprehensive design project, concluding with a formal report.

MARKETING AND RETAILING

MKT 120  Principles of Marketing  3 0 0 0 3
This course introduces principles and problems of marketing goods and services. Topics include promotion, placement, and pricing strategies for products. Upon completion, students should be able to apply marketing principles in organizational decision making. This course is also available through the Virtual Learning Community (VLC).

MKT 122  Visual Merchandising  3 0 0 0 3
This course introduces basic layout design and commercial display in retail and service organizations. Topics include an analysis of display as a visual merchandising medium and an examination of the principles and applications of display and design. Upon completion, students should be able to plan, build, and evaluate designs and displays. This course is a unique concentration requirement of the Marketing and Retailing concentration in the Business Administration program. This course is also available through the Virtual Learning Community (VLC).

MKT 123  Fundamentals of Selling  3 0 0 0 3
This course is designed to emphasize the necessity of selling skills in a modern business environment. Emphasis is placed on sales techniques involved in various types of selling situations. Upon completion, students should be able to demonstrate an understanding of the techniques covered. This course is also available through the Virtual Learning Community (VLC).

MKT 220  Advertising and Sales Promotion  3 0 0 0 3
This course covers the elements of advertising and sales promotion in the business environment. Topics include advertising and sales promotion appeals, selection of media, use of advertising and sales promotion as a marketing tool, and means of testing effectiveness. Upon completion, students should be able to demonstrate an understanding of the concepts covered through application. This course is also available through the Virtual Learning Community (VLC).

MKT 222  Credit Procedures  3 0 0 0 3
This course covers areas of collection that provide an understanding of the expertise needed to manage collection operations. Topics include principles and practices in the extension of credit, collection procedures, and laws pertaining to credit extension and collection. Upon completion, students should be able to demonstrate an understanding of the concepts covered.

MKT 223  Customer Service  3 0 0 0 3
This course stresses the importance of customer relations in the business world. Emphasis is placed on learning how to respond to complex customer requirements and to efficiently handle stressful situations. Upon completion, students should be able to demonstrate the ability to handle customer relations. This course is also available through the Virtual Learning Community (VLC).

MKT 225  Marketing Research  Prerequisites: MKT 120  
This course provides information for decision making by providing guidance in developing, analyzing, and using data. Emphasis is placed on marketing research as a tool in decision making. Upon completion, students should be able to design and conduct a marketing research project and interpret the results. This course is a unique concentration requirement of the Marketing and Retailing concentration in the Business Administration program. This course is also available through the Virtual Learning Community (VLC).

MKT 226  Retail Applications  3 0 0 0 3
This course is designed to develop occupational competence through participation in case studies, group work, and simulations. Emphasis is placed on all aspects of store ownership and operation, including securing financial backing and a sufficient market share. Upon completion, students should be able to demonstrate an understanding of concepts covered through application. This course is a unique concentration requirement of the Marketing and Retailing concentration in the Business Administration program. This course is also available through the Virtual Learning Community (VLC).

MAINTENANCE

MNT 110  Intro to Maint Procedures  1 3 0 0 2
This course covers basic maintenance fundamentals for power transmission equipment. Topics include equipment inspection, lubrication, alignment, and other scheduled maintenance procedures. Upon completion, students should be able to demonstrate knowledge of accepted maintenance procedures and practices according to current industry standards.

MNT 160  Industrial Fabrication  1 3 0 0 2
This course covers the necessary techniques to fabricate and assemble basic items common in industrial environments. Emphasis is placed on students being able to create basic items such as frames, guards, supports, and other components commonly used in industry. Upon completion, students should be able to safely fabricate and assemble selected items within specifications.

MUSIC
Suffixes may be added to some music courses to denote the following instrument designations:

- A - Voice
- B - Piano
- C - Organ
- D - Trumpet
- E - French Horn
- F - Trombone
- G - Tuba/Baritone
- H - Flute
- J - Oboe
- K - Bassoon
- L - Clarinet
- M - Saxophone
- N - Violin
- P - Viola
- R - Cello
- S - Double Bass
- T - Percussion
- U - Guitar
- V - Harp

MUS 110  Music Appreciation  3 0 0 0 3
This course is a basic survey of the music of the Western world. Emphasis is placed on the elements of music, terminology, composers, form, and style within a historical perspective. Upon completion, students should be able to demonstrate skills in basic listening and understanding of the art of music. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.
MUS 121  Music Theory I  3  2  0  0  4  
This course provides an in-depth introduction to melody, rhythm, and harmony. Emphasis is placed on fundamental melodic, rhythmic, and harmonic analysis, introduction to part writing, ear training, and sight-singing. Upon completion, students should be able to demonstrate proficiency in the recognition and application of the above. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 122  Music Theory II  3  2  0  0  4  
Prerequisites: MUS 121  
This course is a continuation of studies begun in MUS 121. Emphasis is placed on advanced melodic, rhythmic, and harmonic analysis and continued studies in part writing, ear training, and sight singing. Upon completion, students should be able to demonstrate proficiency in the recognition and application of the above. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 141  Ensemble I  0  2  0  0  1  
Corequisites: MUS 121, MUS 161  
This course provides an opportunity to perform in any combination of instrumental, vocal, or keyboard groups of two or more. Emphasis is placed on the development of performance skills and the study of a variety of styles and periods of ensemble literature. Upon completion, students should be able to demonstrate skills needed to participate in ensemble playing leading to performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors.

MUS 142  Ensemble II  0  2  0  0  1  
Prerequisites: MUS 121, MUS 141  
Corequisites: MUS 122, MUS 162  
This course is a continuation of MUS 141. Emphasis is placed on the development of performance skills and the study of a variety of styles and periods of ensemble literature. Upon completion, students should be able to demonstrate skills needed to participate in ensemble playing leading to performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors.

MUS 151  Class Music I  0  2  0  0  1  
This course provides group instruction in skills and techniques of the particular instrument or voice for those with little or no previous experience. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. Colleges may use a letter suffix to designate a specific instrument or voice (see above table). This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 152  Class Music II  0  2  0  0  1  
Prerequisites: MUS 151  
This course is a continuation of MUS 151. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. Colleges may use a letter suffix to designate a specific instrument or voice (see above table). This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 161  Applied Music I  1  2  0  0  2  
Corequisites: MUS 121 and MUS 141  
This course provides individual instruction in the skills and techniques of the particular instrument or voice. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 162  Applied Music II  1  2  0  0  2  
Prerequisites: MUS 121 and MUS 161  
Corequisites: MUS 122 and MUS 142  
This course is a continuation of MUS 161. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 221  Music Theory III  3  2  0  0  4  
Prerequisites: MUS 122  
This course is a continuation of studies begun in MUS 221. Emphasis is placed on altered and chromatic harmony, common practice era compositional techniques and forms, and continued studies in part writing, ear training, and sight-singing. Upon completion, students should be able to demonstrate proficiency in the recognition and application of the above. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 222  Music Theory IV  3  2  0  0  4  
Prerequisites: MUS 221  
This course is a continuation of studies begun in MUS 221. Emphasis is placed on continued study of common practice era compositional techniques and forms, 20th century practices, ear training, and sight singing. Upon completion, students should be able to demonstrate proficiency in the recognition and application of the above. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 241  Ensemble III  0  2  0  0  1  
Prerequisites: MUS 122 and MUS 142  
Corequisites: MUS 221 and MUS 261  
This course is a continuation of MUS 142. Emphasis is placed on the development of performance skills and the study of a variety of styles and periods of ensemble literature. Upon completion, students should be able to demonstrate skills needed to participate in ensemble playing leading to performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors.

MUS 242  Ensemble IV  0  2  0  0  1  
Prerequisites: MUS 221 and MUS 241  
Corequisites: MUS 222 and MUS 262  
This course is a continuation of MUS 241. Emphasis is placed on the development of performance skills and the study of styles of ensemble literature. Upon completion, students should be able to demonstrate skills needed to participate in ensemble playing leading to performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors.

MUS 251  Class Music III  0  2  0  0  1  
Prerequisites: MUS 152  
This course is a continuation of MUS 152. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. Colleges may use a letter suffix to designate a specific instrument or voice (see above table). This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 252  Class Music IV  0  2  0  0  1  
Prerequisites: MUS 251  
This course is a continuation of MUS 251. Emphasis is placed on techniques and styles and the exploration and study of appropriate
literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. Colleges may use a letter suffix to designate a specific instrument or voice (see above table). This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

MUS 261  Applied Music III  1 2 0 0 2
Prerequisites: MUS 122 and MUS 162
Corequisites: MUS 221 and MUS 241
This course is a continuation of MUS 162. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors; additional private lessons and practice hours required.

MUS 262  Applied Music IV  1 2 0 0 2
Prerequisites: MUS 221 and MUS 261
Corequisites: MUS 222 and MUS 242
This course is a continuation of MUS 261. Emphasis is placed on techniques and styles and the exploration and study of appropriate literature. Upon completion, students should be able to demonstrate proficiency in the studied skills and repertoire through performance. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Enrollment is limited to music majors; additional private lessons and practice hours required.

NETWORKING TECHNOLOGY

NET 125  Networking Basics  1 4 0 0 3
This course introduces the networking field. Emphasis is placed on network terminology and protocols, local-area networks, wide-area networks, OSI model, cabling, router programming, Ethernet, IP addressing, and network standards. Upon completion, students should be able to perform tasks related to networking mathematics, terminology, and models, media, Ethernet, subnetting, and TCP/IP Protocols.

NET 126  Routing Basics  1 4 0 0 3
Prerequisites: NET 125
This course focuses on initial router configuration, router software management, routing protocol configuration, TCP/IP, and access control lists (ACLs). Emphasis will be placed on the fundamentals of router configuration, managing router software, routing protocol, and access lists. Upon completion, students should have an understanding of routers and their role in WANs, router configuration, routing protocols, TCP/IP, troubleshooting, and ACLs.

NET 225  Routing and Switching I  1 4 0 0 3
Prerequisites: NET 126
This course focuses on advanced IP addressing techniques, intermediate routing protocols, command-line interface configuration of switches, Ethernet switching, VLANs, STP, and VTP. Emphasis will be placed on application and demonstration of skills acquired in prerequisite courses. Upon completion, students should be able to perform tasks related to VLSM, routing protocols, switching concepts and configuration, STP, VLANs, and VTP.

NET 226  Routing and Switching II  1 4 0 0 3
Prerequisites: NET 225
This course introduces WAN theory and design, WAN technology, PPP, Frame Relay, ISDN, and additional case studies. Topics include network congestion problems, TCP/IP transport and network layer protocols, advanced routing and switching configuration, ISDN protocols, PPP encapsulation operations on a router. Upon completion, students should be able to provide solutions for network routing problems, identify ISDN protocols, and describe the Spanning Tree protocol.

NET 240  Network Design  3 0 0 0 3
Prerequisites: NET 110 or NET 125
This course covers the principles of the design of LANs and WANs. Topics include network architecture, transmission systems, traffic management, bandwidth requirements, Internet working devices, redundancy, and broad-band versus base-band systems. Upon completion, students should be able to design a network to meet specified business and technical requirements.

NETWORKING OPERATING SYSTEMS

NOS 110  Operating System Concepts  2 3 0 0 3
This course introduces students to a broad range of operating system concepts, including installation and maintenance. Emphasis is placed on operating system concepts, management, maintenance, and resources required. Upon completion of this course, students will have an understanding of OS concepts, installation, management, maintenance, using a variety of operating systems.

NOS 120  Linux/UNIX Single User  2 2 0 0 3
Prerequisites: NOS 110 or CET 211
This course develops the necessary skills for students to develop both GUI and command line skills for using and customizing a Linux workstation. Topics include Linux file system and access permissions, GNOME Interface, VI editor, X Window System expression pattern matching, I/O redirection, network and printing utilities. Upon completion, students should be able to customize and use Linux systems for command line requirements and desktop productivity roles.

NOS 130  Windows Single User  2 2 0 0 3
Prerequisites: NOS 110 or CET 211
This course introduces operating system concepts for single-user systems. Topics include hardware management, file and memory management, system configuration/optimization, and utilities. Upon completion, students should be able to perform operating systems functions at the support level in a single-user environment.

NOS 220  Linux/UNIX Admin I  2 2 0 0 3
Prerequisites: NOS 120
This course introduces the Linux file system, group administration, and system hardware controls. Topics include installation, creation and maintaining file systems, NIS client and DHCP client configuration, NFS, SMB/Samba, Configure X, Gnome, KDE, basic memory, processes, and security. Upon completion, students should be able to perform system administration tasks including installation, configuring and attaching a new Linux workstation to an existing network.

NOS 230  Windows Admin I  2 2 0 0 3
Prerequisites: NOS 130
This course covers the installation and administration of a Windows Server network operating system. Topics include managing and maintaining physical and logical devices, access to resources, the server environment, managing users, computers, and groups, and Managing/Implementing Disaster Recovery. Upon completion, students should be able to manage and maintain a Windows Server environment.

NURSING

NUR 111  Intro to Health Concepts  4 6 0 0 8
Prerequisites: Listing on the Nurse Aide Registry
Corequisites: BIO 165
This course introduces the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts within each domain including medication administration, assessment, nutrition, ethics, interdisciplinary teams, informatics, evidence-based practice, individual-centered care, and quality improvement. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.
NUR 112 Health-Illness Concepts 3 0 6 0 5
Prerequisites: NUR 111 and BIO 165
Corequisites: NUR 211, BIO 166 and PSY 150
This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of acid-base, metabolism, cellular regulation, oxygenation, infection, stress/coping, health-wellness-illness, communication, caring interventions, managing care, safety, quality improvement, and informatics. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.

NUR 113 Family Health Concepts 3 0 6 0 5
Prerequisites: NUR 111, NUR 112, NUR 114 and NUR 211
Corequisites: NUR 212
This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of oxygenation, sexuality, reproduction, grief/loss, mood/affect, behaviors, development, family, health-wellness-illness, communication, caring interventions, managing care, safety, and advocacy. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.

NUR 114 Holistic Health Concepts 3 0 6 0 5
Prerequisites: NUR 111, NUR 112 and NUR 211
Corequisites: BIO 175, PSY 241
This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of cellular regulation, perfusion, inflammation, sensory perception, stress/coping, mood/affect, cognition, self, violence, health-wellness-illness, professional behaviors, caring interventions, and safety. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.

NUR 211 Health Care Concepts 3 0 6 0 5
Prerequisites: NUR 111
Corequisites: NUR 112, BIO 166 and PSY 150
This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of cellular regulation, perfusion, infection, immunity, mobility, comfort, behaviors, health-wellness-illness, clinical decision-making, caring interventions, managing care, and safety. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.

NUR 212 Health System Concepts 3 0 6 0 5
Prerequisites: NUR 111, NUR 112, NUR 114 and NUR 211
Corequisites: NUR 113
This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of grief/loss, violence, health-wellness-illness, collaboration, managing care, safety, advocacy, legal issues, policy, healthcare systems, ethics, accountability, and evidence-based practice. Upon completion, students should be able to provide safe nursing care incorporating the concepts identified in this course.

NUR 213 Complex Health Concepts 4 3 15 0 10
Prerequisites: NUR 111, NUR 112, NUR 113, NUR 114, NUR 211 and NUR 212
This course is designed to assimilate the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of fluid/electrolytes, metabolism, perfusion, mobility, stress/coping, violence, health-wellness-illness, professional behaviors, caring interventions, managing care, healthcare systems, and quality improvement. Upon completion, students should be able to demonstrate the knowledge, skills, and attitudes necessary to provide quality, individualized, entry level nursing care.

OFFICE SYSTEMS TECHNOLOGY

OST 131 Keyboarding 1 2 0 0 2
This course covers basic keyboarding skills. Emphasis is placed on the touch system, correct techniques, and development of speed and accuracy. Upon completion, students should be able to key at an acceptable speed and accuracy level using the touch system. The course is considered developmental for a student with a typing speed of less than 20 wpm.

OST 134 Text Entry and Formatting 2 2 0 0 3
Prerequisites: OST 131 or typing speed of 20 wpm
This course is designed to provide skills needed to increase speed, improve accuracy, and format documents. Topics include letters, memos, tables, and business reports. Upon completion, students should be able to produce documents and key timed writings at speeds commensurate with employability.

OST 136 Word Processing 2 2 0 0 3
This course is designed to introduce word processing concepts and applications. Topics include preparation of a variety of documents and mastery of specialized software functions. Upon completion, students should be able to work effectively in a computerized word processing environment.

OST 137 Office Software Applications 2 2 0 0 3
This course introduces the concepts and functions of software that meets the changing needs of the community. Emphasis is placed on the terminology and use of software through a hands-on approach. Upon completion, students should be able to use software in a business environment.

OST 141 Med Terms I-Med Office 3 0 0 0 3
This course uses a language-structure approach to present the terminology and vocabulary that will be encountered in medical office settings. Topics include word parts that relate to systemic components, conditions, pathology, and disorder remediation in approximately one-half of the systems of the human body. Upon completion, students should be able to relate words to systems, pluralize, define, pronounce, and construct sentences with the included terms.

OST 148 Med Coding Billing and Insurance 3 0 0 0 3
This course introduces fundamentals of medical coding, billing, and insurance. Emphasis is placed on the medical billing cycle to include third party payers, coding concepts, and forms preparation. Upon completion, students should be able to accurately complete a standard claim form.

OST 149 Med Legal Issues 3 0 0 0 3
This course introduces the complex legal, moral, and ethical issues involved in providing health-care services. Emphasis is placed on the legal requirements of medical practices; the relationship of physician, patient, and office personnel; professional liabilities; and medical practice liability. Upon completion, students should be able to demonstrate a working knowledge of current medical law and accepted ethical behavior.

OST 153 Office Finance Solutions 1 2 0 0 2
This course introduces basic bookkeeping concepts. Topics include entering data in accounts payable and receivable, keeping petty cash records, maintaining inventory, reconciling bank statements, running payroll, and generating simple financial reports. Upon completion, students should be able to demonstrate competence in the entry and manipulation of data to provide financial solutions for the office.

OST 164 Text Editing Applications 3 0 0 0 3
This course provides a comprehensive study of editing skills needed in the workplace. Emphasis is placed on grammar, punctuation, sentence structure, proofreading, and editing. Upon completion, students should be able to use reference materials to compose and edit text.
OST 171 Intro to Virtual Office  
This course introduces the skills and abilities needed to conduct a variety of office administration activities using the latest technology. Students will learn the proper etiquette of communication electronically as well as the unique procedures and logistics for conducting business in the virtual office. Upon completion, students will know the vocabulary of the virtual office and will have a basic understanding of modern technical communication tools. This course is a unique requirement of the Virtual Office concentration in the Office Systems Technology program.

OST 184 Records Management  
This course includes the creation, maintenance, protection, security, and disposition of records stored in a variety of media forms. Topics include alphabetic, geographic, subject, and numeric filing methods. Upon completion, students should be able to set up and maintain a records management system.

OST 233 Office Publications Design  
Prerequisites: OST 136  
This course provides entry-level skills in using software with desktop publishing capabilities. Topics include principles of page layout, desktop publishing terminology and applications, and legal and ethical considerations of software use. Upon completion, students should be able to design and produce professional business documents and publications.

OST 236 Adv Word/Information Proc  
Prerequisites: OST 136  
This course develops proficiency in the utilization of advanced word/information processing functions. Emphasis is placed on advanced word processing features. Upon completion, students should be able to produce a variety of complex business documents.

OST 243 Med Office Simulation  
Prerequisites: OST 148  
This course introduces medical systems used to process information in the automated office. Topics include traditional and electronic information resources, storing and retrieving information, and the billing cycle. Upon completion, students should be able to use the computer accurately to schedule, bill, update, and make corrections.

OST 271 Office Web Technologies  
This course provides a working knowledge of software and hardware tools used in the virtual office. Students will learn to use the Internet for research, planning, and decision making in an office environment. Upon completion, students will be able to use current and emerging technologies to solve problems and complete projects in the virtual office. This course is a unique requirement of the Virtual Office concentration in the Office Systems Technology program.

OST 272 Virtual Office Capstone  
This course requires students to plan, design, create and publish a Virtual Assistant Web site. Students will also develop a marketing strategy and promotional material for the virtual office. Upon completion, students will have prepared a professional portfolio. This course is a unique requirement of the Virtual Office concentration in the Office Systems Technology program.

OST 284 Emerging Technologies  
This course provides opportunities to explore emerging technologies. Emphasis is placed on identifying, researching, and presenting current technological topics for class consideration and discussion. Upon completion, students should be able to understand the importance of keeping abreast of technological changes that affect the office professional.

OST 289 Administrative Office Management  
Prerequisites: OST 164 and either OST 134 or OST 136  
This course is designed to be a capstone course for the office professional and provides a working knowledge of modern office procedures. Emphasis is placed on scheduling, telephone procedures, travel arrangements, event planning, office design and ergonomics. Upon completion, students should be able to adapt in an office environment.

PROFESSIONAL CRAFTS: JEWELRY

PCJ 262 Hand Wrought Metals  
Prerequisites: PCJ 262  
This course covers the fundamental processes, techniques and tools for heating and forging ferrous and non-ferrous metals. Topics include fire control, use of hammers, tools and traditional techniques for metal shaping. Upon completion, students should be able to heat and use a variety of metals to create tools and shape basic metal projects. Students will study and apply basic blacksmithing skills.

PCJ 263 Advanced Wrought Metals  
Prerequisites: PCJ 262  
This course covers ideas and techniques for designing, heating and shaping metals. Topics include blade processes of forging and stock removal, as well as handle materials and attachment methods. Upon completion, students should be able to use traditional and contemporary techniques to make objects such as buckles, vessels, pendants, and blades. Students will study and apply advanced blacksmithing skills.

PCJ 264 Basic Knife Making  
Prerequisites: PCJ 262  
This course introduces fundamental design and technical skills for knife making. Topics include blade processes of forging and stock removal, as well as handle materials and attachment methods. Upon completion, students should be able to select appropriate techniques, materials, and designs to produce a basic functional or decorative knife.

PCJ 266 Jewelry Tool Making  
Prerequisites: PCJ 262  
This course introduces the fundamental design and technical skills for producing tools used in a jewelry studio. Topics include metal selection, tool design, introduction of hardening and tempering processes with emphasis placed on tools for chasing and repousse. Upon completion, students should be able to select proper steel, design and produce tools for decorative techniques used in the jewelry profession.

PCJ 267 Hand Wrought Joinery  
Prerequisites: PCJ 262  
This course introduces the use of traditional joinery techniques used in the hand wrought metal profession. Emphasis is placed on the history and processes of the traditional joinery using tenons, mortises, collars, rivets, and forge welded joints. Upon completion, students should be able to create joints for hand wrought metal work using mortise and tenon, collars, and hot wraps. Students will apply traditional blacksmithing joinery techniques to explore projects such as display panels, gates or park benches.

PROFESSIONAL CRAFTS: SCULPTURE

PCS 112 Beg. Welding for Artists  
This course is an introduction to the proper equipment and tools of the metal shop and welding methods for the artist. Topics include welding, cutting, forging, fabricating and finishing, and studio safety. Upon completion, students will be able to demonstrate efficient and safe use of metal shop tools and equipment.

PHYSICAL EDUCATION

PED 110 Fit and Well for Life  
This course is designed to investigate and apply the basic concepts and principles of lifetime physical fitness and other health-related factors. Emphasis is placed on wellness through the study of nutrition, weight control, stress management, and consumer facts on exercise and fitness. Upon completion, students should be able to plan a personal, lifelong fitness program based on individual needs,
abilities, and interests. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

PED 111  Physical Fitness I  0 3 0 0 1
This course provides an individualized approach to physical fitness utilizing the five major components. Emphasis is placed on the scientific basis for setting up and engaging in personalized physical fitness programs. Upon completion, students should be able to set up and implement an individualized physical fitness program. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

PED 117  Weight Training I  0 3 0 0 1
This course introduces the basics of weight training. Emphasis is placed on developing muscular strength, muscular endurance, and muscle tone. Upon completion, students should be able to establish and implement a personal weight-training program. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PED 118  Weight Training II  0 3 0 0 1
Prerequisites: PED 117
This course covers advanced levels of weight training. Emphasis is placed on meeting individual training goals and addressing weight training needs and interests. Upon completion, students should be able to establish and implement an individualized advanced weight-training program. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PED 119  Circuit Training  0 3 0 0 1
This course covers the skills necessary to participate in a developmental fitness program. Emphasis is placed on the circuit training method which involves a series of conditioning timed stations arranged for maximum benefit and variety. Upon completion, students should be able to understand and appreciate the role of circuit training as a means to develop fitness. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PED 120  Walking for Fitness  0 3 0 0 1
This course introduces fitness through walking. Emphasis is placed on stretching, conditioning exercises, proper clothing, fluid needs, and injury prevention. Upon completion, students should be able to participate in a recreational walking program. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Parts of the course may be at an off-campus location.

PED 121  Walk, Jog, Run  0 3 0 0 1
This course covers the basic concepts involved in safely and effectively improving cardiovascular fitness. Emphasis is placed on walking, jogging, or running as a means of achieving fitness. Upon completion, students should be able to understand and appreciate the benefits derived from this activity. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement. Parts of the course may be at an off-campus location.

PED 122  Yoga I  0 2 0 0 1
This course introduces the basic discipline of yoga. Topics include proper breathing, relaxation techniques, and correct body positions. Upon completion, students should be able to demonstrate the procedures of yoga. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PED 123  Yoga II  0 2 0 0 1
Prerequisites: PED 122
This course introduces more detailed aspects of the discipline of yoga. Topics include breathing and physical postures, relaxation, and mental concentration. Upon completion, students should be able to demonstrate advanced procedures of yoga. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PED 137  Badminton  0 2 0 0 1
This course covers the fundamentals of badminton. Emphasis is placed on the basics of serving, clears, drops, drives, smash, and net shots and the rules and strategies of singles and doubles. Upon completion, students should be able to apply these skills in playing situations. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

PED 186  Dancing for Fitness  0 2 0 0 1
This course is designed to develop movement and recreational dance skills, safety, fitness, coordination, and techniques used to teach various groups. Emphasis is placed on participation and practice with adapting dances for ages and ability levels. Upon completion, students should be able to demonstrate knowledge of fitness through social, folk, and square dance participation and instruction.

PED 217  Pilates I  0 2 0 0 1
This course provides an introduction to the pilates method of body conditioning exercise. Topics include instruction in beginning and intermediate pilates exercises using a mat or equipment, history of pilates method, and relevant anatomy and physiology. Upon completion, students should be able to perform beginning and intermediate exercises, and possess an understanding of the benefits of conditioning the body’s core muscles.

PED 218  Pilates II  0 2 0 0 1
Prerequisites: PED 217
This course provides continued instruction to the pilates method of body conditioning exercise. Topics include instruction in intermediate and advanced pilates exercises using a mat or equipment, relevant anatomy and physiology, and further discussion of related concepts. Upon completion, students should be able to perform intermediate and advanced exercises, and possess the autonomy to maintain their own personal pilates practice.

PHILOSOHY

PHI 210  History of Philosophy  3 0 0 0 3
Prerequisites: ENG 111
This course introduces fundamental philosophical issues through an historical perspective. Emphasis is placed on such figures as Plato, Aristotle, Lao-Tzu, Confucius, Augustine, Aquinas, Descartes, Locke, Kant, Wollstonecraft, Nietzsche, and Sartre. Upon completion, students should be able to identify and distinguish among the key positions of the philosophers studied. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

PHI 230  Introduction to Logic  3 0 0 0 3
Prerequisites: ENG 111
This course introduces basic concepts and techniques for distinguishing between good and bad reasoning. Emphasis is placed on deduction, induction, validity, soundness, syllogisms, truth functions, predicate logic, analogical inference, common fallacies, and scientific methods. Upon completion, students should be able to analyze arguments, distinguish between deductive and inductive arguments, test validity, and appraise inductive reasoning. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

PHI 240  Introduction to Ethics  3 0 0 0 3
Prerequisites: ENG 111
This course introduces theories about the nature and foundations of moral judgments and applications to contemporary moral issues. Emphasis is placed on utilitarianism, rule-based ethics, existentialism, relativism versus objectivism, and egoism. Upon completion, students should be able to apply various ethical theories to individual moral issues such as euthanasia, abortion, crime and punishment, and justice. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.
PHYSICAL SCIENCE

PHS 130  Earth Science  3 2 0 0 4
This course is a survey of the forces that impact the earth. Topics include geology, oceanography, and meteorology. Upon completion, students should be able to explain and identify the forces within, on, and around the earth as they influence the earth's dynamics. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.

PHYSICS

PHY 131  Physics-Mechanics  3 2 0 0 4
Prerequisites: MAT 121, MAT 161, MAT 171 or MAT 175
This algebra/trigonometry-based course introduces fundamental physical concepts as applied to engineering technology fields. Topics include systems of units, problem-solving methods, graphical analysis, vectors, motion, forces, Newton's laws of motion, work, energy, power, momentum, and properties of matter. Upon completion, students should be able to apply the principles studied to applications in engineering technology fields.

PHY 151  College Physics I  3 2 0 0 4
Prerequisites: MAT 161 or MAT 171
This course uses algebra- and trigonometry-based mathematical models to introduce the fundamental concepts that describe the physical world. Topics include units and measurement, vectors, linear kinematics and dynamics, energy, power, momentum, fluid mechanics, and heat. Upon completion, students should be able to demonstrate an understanding of the principles involved and display analytical problem-solving ability for the topics covered. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics. Students in associate of applied science degree programs can enroll in this course after completing MAT 122 with a grade of C or higher.

PHY 152  College Physics II  3 2 0 0 4
Prerequisites: PHY 151
This course uses algebra- and trigonometry-based mathematical models to introduce the fundamental concepts that describe the physical world. Topics include electrostatic forces, electric fields, electric potentials, direct-current circuits, magnetostatic forces, magnetic fields, electromagnetic induction, alternating-current circuits, and light. Upon completion, students should be able to demonstrate an understanding of the principles involved and display analytical problem-solving ability for the topics covered. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.

PLUMBING

PLU 110  Modern Plumbing  4 15 0 0 9
This course introduces the tools, equipment, and materials associated with the plumbing industry. Topics include safety, use and care of tools, recognition and assembly of fittings and pipes, and other related topics. Upon completion, students should be able to safely assemble various pipes and fittings in accordance with state code requirements.

PLU 150  Plumbing Diagrams  1 2 0 0 2
This course introduces sketching diagrams and interpretation of blueprints applicable to the plumbing trades. Emphasis is placed on plumbing plans for domestic and/or commercial buildings. Upon completion, students should be able to sketch plumbing diagrams applicable to the plumbing trades.

PLU 160  Plumbing Estimates  1 2 0 0 2
This course covers techniques for estimating quantities of materials and cost of installation for various types of plumbing systems. Topics include design of systems, codes, material take-offs, pricing, and public relations. Upon completion, students should be able to order materials needed for installation from a designed system.

POLITICAL SCIENCE

POL 120  American Government  3 0 0 0 3
This course is a study of the origins, development, structure, and functions of American national government. Topics include the constitutional framework, federalism, the three branches of government including the bureaucracy, civil rights and liberties, political participation and behavior, and policy formation. Upon completion, students should be able to demonstrate an understanding of the basic concepts and participatory processes of the American political system. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

POL 130  State and Local Government  3 0 0 0 3
This course includes state and local political institutions and practices in the context of American federalism. Emphasis is placed on procedural and policy differences as well as political issues in state, regional, and local governments of North Carolina. Upon completion, students should be able to identify and discuss various problems associated with intergovernmental politics and their effect on the community and the individual. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

PSYCHOLOGY

PSY 150  General Psychology  3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course provides an overview of the scientific study of human behavior. Topics include history, methodology, biopsychology, sensation, perception, learning, motivation, cognition, abnormal behavior, personality theory, social psychology, and other relevant topics. Upon completion, students should be able to demonstrate a basic knowledge of the science of psychology. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

PSY 231  Forensic Psychology  3 0 0 0 3
Prerequisites: PSY 150
This course introduces students to concepts which unite psychology and the legal system. Topics include defining competency, insanity, involuntary commitment, as well as introducing forensic assessment techniques, such as interviewing process, specialized assessments, and collecting collateral information. Upon completion, students should be able to demonstrate knowledge in areas of forensic psychology: risk assessment, criminal competencies, insanity, psychopathology, and mentally disordered offenders. This course has been approved for transfer under the Comprehensive Articulation Agreement as a premajor and/or elective course requirement.

PSY 237  Social Psychology  3 0 0 0 3
Prerequisites: PSY 150 or SOC 210
This course introduces the study of individual behavior within social contexts. Topics include affiliation, attitude formation and change, conformity, altruism, aggression, attribution, interpersonal attraction, and group behavior. Upon completion, students should be able to demonstrate an understanding of the basic principles of social influences on behavior. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

PSY 241  Developmental Psych  3 0 0 0 3
Prerequisites: PSY 150
This course is a study of human growth and development. Emphasis is placed on major theories and perspectives as they relate to the physical, cognitive, and psychosocial aspects of development from conception to death. Upon completion, students should be able to demonstrate knowledge of development across the life span. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.
REL 111 Intro to Old Testament 3 0 0 0 3
This course is a survey of the literature of the Hebrews with readings from the law, prophets, and other writings. Emphasis is placed on the use of literary, historical, archeological, and cultural analysis. Upon completion, students should be able to use the tools of critical analysis to read and understand Old Testament literature. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

REL 221 Religion in America 3 0 0 0 3
This course is an examination of religious beliefs and practice in the United States. Emphasis is placed on mainstream religious traditions and non-traditional religious movements from the Colonial period to the present. Upon completion, students should be able to recognize and appreciate the diversity of religious traditions in America. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

REAL ESTATE
RLS 112 Broker Prelicensing 5 0 0 0 5
Prerequisites: RED 090 and DMA 10-30
This course provides basic instruction in real estate principles and practices. Topics include law, finance, brokerage, closing, valuation, management, taxation, mathematics, construction, land use, property insurance, and NC License Law and Commission Rules. Upon completion, students should be able to demonstrate basic knowledge and skills necessary for real estate sales.

INFORMATION SYSTEMS SECURITY
SEC 110 Security Concepts 2 2 0 0 3
This course introduces the concepts and issues related to securing information systems and the development of policies to implement information security controls. Topics include the historical view of networking and security, security issues, trends, security resources, and the role of policy, people, and processes in information security. Upon completion, students should be able to identify information security risks, create an information security policy, and identify processes to implement and enforce policy.

SIMULATION AND GAME DEVELOPMENT
SGD 111 Introduction to SGD 2 3 0 0 3
This course provides students with an introduction to simulation and game development. Topics include setting, storytelling, narrative, character design, interface design, game play, internal economy, core mechanics, game genres, AI, the psychology of game design and professionalism. Upon completion, students should be able to demonstrate knowledge of the major aspects of simulation and game design and development.

SGD 112 SGD Design 2 3 0 0 3
This course introduces the fundamentals of simulation and game design. Topics include industry standards and design elements for simulations and games. Upon completion, students should be able to design simple simulations and/or games.

SGD 113 SGD Programming 2 3 0 0 3
This course introduces the fundamentals of programming languages and tools employed in simulation and game development. Emphasis
is placed on programming concepts used to create simulations and games. Upon completion, students should be able to program simple games and/or simulations.

SGD 114 3D Modeling 2 3 0 0 3
This course introduces the tools required to create three-dimensional (3D) models. Emphasis is placed on exploring tools used to create 3D models. Upon completion, students should be able to create and animate 3D models using 3D modeling tools.

SGD 117 Art for Games 2 3 0 0 3
This course introduces students to the basic principles of art and how they apply to simulations and games. Emphasis is placed on learning to develop industry quality concept art for characters and other assets, as well as techniques needed to create such art. Upon completion, students should be able to create their own industry standard concept art for use in SGD projects.

SGD 135 Serious Games 3 0 0 0 3
This course provides students with an overview of serious games and their applications in immersive learning and education. Emphasis is placed on developing games for education, corporate training, and medical/military simulations. Upon completion, students should be able to design their own serious games.

SGD 162 SG 3D Animation 2 3 0 0 3
This course introduces the fundamental principles of 3D animation used in simulation and game development. Emphasis is placed on a historical survey of 3D animation, aspects of the 3D animation techniques. Upon completion, students should be able to produce 3D character sketches, morph simple objects, create walk and run cycles and develop professional storyboards.

SGD 165 SG Character Development 2 3 0 0 3
This course introduces the concepts needed to create fictional personality for use in digital videos, animations, simulations and games. Topics include aspects of character, developing backgrounds, mannerisms and voice. Upon completion, students should be able to develop characters and backgrounds for simulations and games.

SGD 172 Virtual SG Environments 2 3 0 0 3
This course covers the use of virtual reality tools and techniques in simulation and game development. Emphasis is placed on acquiring the skills necessary to create scalable virtual characters and environments for use in simulations and games. Upon completion, students should be able to create a simple game or simulation in a virtual environment.

SGD 174 SG Level Design 2 3 0 0 3
This course introduces the tools used to create levels for real-time simulation and games. Topics include level design, architecture theory, modeling for 3D engines and texturing methods. Upon completion, students should be able to design simple levels using industry standard tools.

SGD 212 SGD Design II 2 3 0 0 3
Prerequisites: SGD 112
The course covers the advanced principles of simulation and game design. Topics include advanced design concepts in simulation and game development. Upon completion, students should be able to design an advanced simulation or game.

SGD 213 SGD Programming II 2 3 0 0 3
Prerequisites: SGD 113, CSC 134, CSC 151, or CSC 153
This course covers advanced programming concepts used to create simulations and games. Emphasis is placed on acquiring advanced programming skills for use in creating simulations and games. Upon completion, students should be able to program an advanced simulation or game.

SGD 214 3D Modeling II 2 3 0 0 3
Prerequisites: SGD 114
This course introduces the tools used to create and animate advanced 3 dimensional models. Emphasis is placed on identifying and utilizing the tools required to create and animate advanced 3D models. Upon completion, students should be able to create and animate advanced 3D models using 3D modeling tools.

SGD 244 3D Modeling III 2 3 0 0 3
Prerequisites: SGD 214
This course is designed to further a student's knowledge in creating visually compelling 3D models through the use of industry-standard software. Emphasis is placed on learning how to develop accurate textures and normal maps. Upon completion, students should be able to develop industry caliber 3D models.

SGD 274 SG Level Design II 2 3 0 0 3
Prerequisites: SGD 174
This course introduces the advanced tools used to create levels for real-time simulations and games. Topics include advanced level guide and architecture theory, concepts related to “critical path” and “flow,” game balancing, playtesting and storytelling. Upon completion, students should be able to design complex levels using industry standard tools.

SOC 210 Introduction to Sociology 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course introduces the scientific study of human society, culture, and social interactions. Topics include socialization, research methods, diversity and inequality, cooperation and conflict, social change, social institutions, and organizations. Upon completion, students should be able to demonstrate knowledge of sociological concepts as they apply to the interplay among individuals, groups, and societies. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

SOC 213 Sociology of the Family 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course covers the institution of the family and other intimate relationships. Emphasis is placed on mate selection, gender roles, sexuality, communication, power and conflict, parenthood, diverse lifestyles, divorce and remarriage, and economic issues. Upon completion, students should be able to analyze the family as a social institution and the social forces which influence its development and change. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.

SOC 220 Social Problems 3 0 0 0 3
Prerequisites: ENG 090 and RED 090
This course provides an in-depth study of current social problems. Emphasis is placed on causes, consequences, and possible solutions to problems associated with families, schools, workplaces, communities, and the environment. Upon completion, students should be able to recognize, define, analyze, and propose solutions to these problems. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in social/behavioral sciences.
SPANISH

SPA 110 Introduction to Spanish  2 0 0 0 2
This course provides an introduction to understanding, speaking, reading, and writing Spanish. Emphasis is placed on pronunciation, parts of speech, communicative phrases, culture, and skills for language acquisition. Upon completion, students should be able to identify and apply basic grammar concepts, display cultural awareness, and communicate in simple phrases in Spanish.

SPA 111 Elementary Spanish I  3 0 0 0 3
Prerequisites: SPA 110 or high school Spanish
Corequisites: SPA 181
This course introduces the fundamental elements of the Spanish language within a cultural context. Emphasis is placed on the development of basic listening, speaking, reading, and writing skills. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written Spanish and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

SPA 112 Elementary Spanish II  3 0 0 0 3
Prerequisites: SPA 111
Corequisites: SPA 182
This course is a continuation of SPA 111 focusing on the fundamental elements of the Spanish language within a cultural context. Emphasis is placed on the progressive development of listening, speaking, reading, and writing skills. Upon completion, students should be able to comprehend and respond with increasing proficiency to spoken and written Spanish and demonstrate further cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

SPA 120 Spanish for the Workplace  3 0 0 0 3
This course offers applied Spanish for the workplace to facilitate basic communication with people whose native language is Spanish. Emphasis is placed on oral communication and career-specific vocabulary that targets health, business, and/or public service professions. Upon completion, students should be able to communicate at a functional level with native speakers and demonstrate cultural sensitivity.

SPA 141 Culture and Civilization  3 0 0 0 3
This course provides an opportunity to explore issues related to the Hispanic world. Topics include historical and current events, geography, and customs. Upon completion, students should be able to identify and discuss selected topics and cultural differences related to the Hispanic world. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 161 Cultural Immersion  2 3 0 0 3
Prerequisites: SPA 111
This course explores Hispanic culture through intensive study on campus and field experience in a host country or area. Topics include an overview of linguistic, historical, geographical, sociopolitical, economic, and/or artistic concerns of the area visited. Upon completion, students should be able to exhibit first-hand knowledge of issues pertinent to the host area and demonstrate understanding of cultural differences. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 181 Spanish Lab 1  0 2 0 0 1
Corequisites: SPA 111
This course provides an opportunity to enhance acquisition of the fundamental elements of the Spanish language. Emphasis is placed on the progressive development of basic listening, speaking, reading, and writing skills through the use of various supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written Spanish and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 182 Spanish Lab 2  0 2 0 0 1
Prerequisites: SPA 181
Corequisites: SPA 112
This course provides an opportunity to enhance acquisition of the fundamental elements of the Spanish language. Emphasis is placed on the progressive development of basic listening, speaking, reading, and writing skills through the use of various supplementary learning media and materials. Upon completion, students should be able to comprehend and respond with increasing proficiency to spoken and written Spanish and demonstrate cultural awareness. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 211 Intermediate Spanish I  3 0 0 0 3
Prerequisites: SPA 112
This course provides a review and expansion of the essential skills of the Spanish language. Emphasis is placed on the study of authentic and representative literary and cultural texts. Upon completion, students should be able to communicate effectively, accurately, and creatively about the past, present, and future. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

SPA 212 Intermediate Spanish II  3 0 0 0 3
Prerequisites: SPA 211
This course provides a continuation of SPA 211. Emphasis is placed on the continuing study of authentic and representative literary and cultural texts. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in humanities/fine arts.

SPA 215 Spanish Phonetics/Structure  3 0 0 0 3
This course is designed to improve the understanding of Spanish phonetics and the structure of the Spanish language. Topics include the structure of the Spanish language, phonology, morphology, and syntax. Upon completion, students should have an understanding of the phonetics and structure of the Spanish language and be able to contrast the structure of the Spanish and English languages.

SPA 221 Spanish Conversation  3 0 0 0 3
Prerequisites: SPA 212
This course provides an opportunity for intensive communication in spoken Spanish. Emphasis is placed on vocabulary acquisition and interactive communication through the discussion of media materials and authentic texts. Upon completion, students should be able to discuss selected topics, express ideas and opinions clearly, and engage in formal and informal conversations. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 231 Reading and Composition  3 0 0 0 3
Prerequisites: SPA 212
This course provides an opportunity for intensive reading and composition in Spanish. Emphasis is placed on the use of literary and cultural materials to enhance and expand reading and writing skills. Upon completion, students should be able to demonstrate in writing an in-depth understanding of assigned readings. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

SPA 281 Spanish Lab 3  0 2 0 0 1
Prerequisites: SPA 182
Corequisites: SPA 211
This course provides an opportunity to enhance the review and expansion of the essential skills of the Spanish language. Emphasis is placed on the study of authentic and representative literary and cultural texts through the use of various supplementary learning
media and materials. Upon completion, students should be able to communicate effectively, accurately, and creatively about the past, present, and future. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**SPA 282** Spanish Lab 4

Prerequisites: SPA 281
Corequisites: SPA 212

This course provides an opportunity to enhance the review and expansion of the essential skills of the Spanish language. Emphasis is placed on the continuing study of authentic and representative literary and cultural texts through the use of various supplementary learning media and materials. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication. This course has been approved to satisfy the Comprehensive Articulation Agreement pre-major and/or elective course requirement.

**SPANISH INTERPRETER**

**SPI 113** Intro. to Spanish Inter.

Prerequisites: ENG 090, RED 090 and SPA 110

This course introduces the field of interpreting, interpretation models, cognitive processes associated with interpretation, professional ethical standards, employment opportunities, and working conditions. Topics include specialized jargon, code of ethics, interpreter assessments/qualifications, and protocol associated with various settings. Upon completion, students should be able to explain the rationale for placement of interpreters and apply ethical standards to a variety of working situations.

**SPI 114** Analytical Skills Spanish Inter.

Prerequisites: SPI 113

This course is designed to improve cognitive processes associated with interpreting, listening, short-term memory, semantic equivalence, visual/auditory processing, thought organization and logic. Emphasis is placed on developing skills necessary to generate equivalent messages between Spanish and English. Upon completion, students should be able to communicate spontaneously and accurately with increasing complexity and sophistication.

**SPI 213** Review of Grammar

Prerequisites: SPA 112

This course is designed to review the common elements of Spanish grammar in oral and written form. Emphasis is placed on the fundamental grammatical concepts of the Spanish language. Upon completion, students should be able to demonstrate comprehension and correct usage of specified grammatical concepts in both oral and written form.

**SPI 214** Introduction to Translation

Prerequisites: ENG 114, SPA 212 and SPI 114

This course is designed to improve the quality of Spanish to English and English to Spanish translation. Emphasis is placed on the practice of Spanish to English and English to Spanish translation in a variety of prose styles. Upon completion, students should be able to demonstrate the usage and understanding of the processes involved in translating.

**SUSTAINABILITY TECHNOLOGIES**

**SST 110** Intro to Sustainability

This course introduces sustainability issues and individual contributions toward environmental sustainability. Topics include management processes needed to maximize renewable/non-renewable energy resources, economics of sustainability, and reduction of environmental impacts. Upon completion, students should be able to discuss sustainability practices and demonstrate an understanding of their effectiveness and impacts.

**SST 120** Energy Use Analysis

This course introduces the principles of analyzing energy use, energy auditing tools and techniques, conservation techniques, and calculating energy savings. Topics include building system control theory, calibrating digital controls, energy loss calculations, and applicable conservation techniques. Upon completion, students should be able to demonstrate an understanding of energy use, audits, and controls in the analysis of energy consumption.

**SURGICAL TECHNOLOGY**

**SUR 110** Intro to Surgical Tech

Prerequisites: Enrollment in the Surg Tech program
Corequisites: SUR 111 and BIO 163

This course provides a comprehensive study of peri-operative care, patient care concepts, and professional practice concepts within the profession of surgical technology. Topics include introductory concepts, organizational structure and relationships, legal, ethical and moral issues, medical terminology, pharmacology, anesthesia, wound healing management concepts, and the technological sciences. Upon completion, students should be able to apply theoretical knowledge of the course topics to the practice of surgical technology.

**SUR 111** Periop Patient Care

Prerequisites: Enrollment in the Surg Tech program
Corequisites: SUR 110 and BIO 163

This course provides the surgical technology student the theoretical knowledge required to function in the pre-operative, intra-operative, and post-operative role. Topics include asepsis, disinfection and sterilization, physical environment, instrumentation, equipment, peri-operative patient care, and peri-operative case management. Upon completion, students should be able to apply the principles and practice of the peri-operative team member to the operative environment.

**SUR 122** Surgical Procedures I

Prerequisites: SUR 110, SUR 111 and BIO 163
Corequisites: BIO 175 and SUR 123

This course provides an introduction to selected basic and intermediate surgical specialties that students are exposed to in the first clinical rotation. Emphasis is placed on related surgical anatomy, pathology, and procedures that enhance theoretical knowledge of patient care, instrumentation, supplies, and equipment. Upon completion, students should be able to correlate, integrate, and apply theoretical knowledge of the course topics to the clinical operative environment.

**SUR 123** SUR Clinical Practice I

Prerequisites: SUR 110, SUR 111 and BIO 163
Corequisites: SUR 122 and BIO 175

This course provides clinical experience with a variety of perioperative assignments to build upon skills learned in SUR 111. Emphasis is placed on the scrub and circulating roles of the surgical technologist including aseptic technique and basic case preparation for selected surgical procedures. Upon completion, students should be able to prepare, assist with, and dismantle basic surgical cases in both the scrub and circulating roles.

**SUR 134** Surgical Procedures II

Prerequisites: SUR 122 and SUR 123
Corequisites: SUR 135

This course provides a comprehensive study of intermediate and advanced surgical specialties that students are exposed to in the second clinical rotation. Emphasis is placed on related surgical anatomy, pathology, and procedures that enhance theoretical knowledge of patient care, instrumentation, supplies, and equipment.
Upon completion, students should be able to correlate, integrate, and apply theoretical knowledge of the course topics to the clinical operative environment.

**SUR 135** SUR Clinical Practice II  
Prerequisites: SUR 123  
Corequisites: SUR 134  
This course provides clinical experience with a variety of perioperative assignments to build skills required for complex perioperative patient care. Emphasis is placed on greater technical skills, critical thinking, speed, efficiency, and autonomy in the operative setting. Upon completion, students should be able to function in the role of an entry-level surgical technologist.

**SUR 137** Prof Success Prep  
Prerequisites: SUR 122 and SUR 123  
Corequisites: SUR 134 and SUR 135  
This course provides employability skills and an overview of theoretical knowledge in preparation for certification. Topics include test-taking strategies, resume preparation, interviewing strategies, communication skills, and teamwork concepts. Upon completion, students should be able to prepare a resume, demonstrate appropriate interview techniques, and identify strengths and weaknesses in preparation for certification.

**SUR 210** Adv SUR Clinical Practice  
Prerequisites: SUR 134 and SUR 135  
This course is designed to provide individualized experience in advanced practice, education, circulating, and managerial skills. Emphasis is placed on developing and demonstrating proficiency in skills necessary for advanced practice. Upon completion, students should be able to assume leadership roles in a chosen specialty area.

**SUR 211** Adv Theoretical Concepts  
Prerequisites: SUR 134 and SUR 135  
This course covers theoretical knowledge required for extension of the surgical technologist role. Emphasis is placed on advanced practice in complex surgical specialties, educational methodologies, and managerial skills. Upon completion, students should be able to assume leadership roles in a chosen specialty area.

**SUR 212** SUR Clinical Supplement  
Prerequisites: SUR 134 and SUR 135  
This course provides the opportunity to continue mastering the continuity of care in the peri-operative assignment. Emphasis is placed on maintaining and enhancing acquired clinical skills in the peri-operative setting. Upon completion, students should be able to demonstrate mastery of surgical techniques in the role of the entry surgical technologist.

**TURFGRASS MANAGEMENT**

**TRF 110** Intro Turfgrass Cult & ID  
Prerequisites: TRF 110  
This course covers the principles of reproduction, growth development, species characteristics, establishment and maintenance of golf courses and sports fields, and lawns. Topics include principles of reproduction, growth development, species characteristics, establishment and maintenance of golf courses and sports fields, and lawn applications. Upon completion, students should be able to identify turfgrass species and develop an establishment and maintenance plan for high quality turf areas in accordance with sustainable practices.

**TRF 260** Adv Turfgrass Mgmt  
Prerequisites: TRF 110  
This course covers the principles and practices involved in turfgrass management. Topics include choosing the best management practice in mowing, pest control, fertilization, irrigation, traffic control, air control, budgeting, and materials procurement. Upon completion, students should be able to demonstrate knowledge of the principles covered and select and apply the best practices in turfgrass management.

**TRANSPORTATION TECHNOLOGY**

**TRN 110** Intro to Transportation Technology  
Prerequisites: TRN 120  
This course provides practical training in the operation and maintenance of wastewater treatment plants. Emphasis is placed on wastewater treatment systems, maintenance procedures, basic process control, and laboratory analyses used by operators of wastewater treatment facilities. Upon completion, students should be able to make operational control changes and minor mechanical repairs needed to ensure compliance with NPDES discharge permits.

**TRN 120** Basic Transp Electricity  
Prerequisites: TRN 120  
This course covers basic electrical theory, wiring diagrams, test equipment, and diagnosis, repair and replacement of batteries, starters, and alternators. Topics include Ohm's Law, circuit construction, wiring diagrams, circuit testing, and basic troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair basic wiring, battery, starting, charging, and electrical concerns.

**TRN 120A** Basic Transp Electrical Lab  
Prerequisites: TRN 120  
This course provides a lab that allows students to enhance their understanding of electrical components and circuits used in the transportation industry. Topics include inspection, diagnosis, and repair of electrical components and circuits using appropriate service information for specific transportation systems. Upon completion, students should be able to diagnose and service electrical components and circuits used in transportation systems.

**TRN 130** Intro to Sustainable Transp  
Prerequisites: TRN 130  
This course provides an overview of alternative fuels and alternative fuel vehicles. Topics include composition and use of alternative fuels including compressed natural gas, biodiesel, ethanol, hydrogen, and synthetic fuels, hybrid/electric, and vehicles using alternative fuels. Upon completion, students should be able to identify alternative fuel vehicles, explain how each alternative fuel delivery system operates, and perform minor repairs.

**TRN 140** Transp Climate Control  
This course covers the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis and repair of climate control components and systems, recovery/recycling of refrigerants, and safety and environmental regulations. Upon completion, students should be able to diagnose and repair vehicle climate control systems.

**TRN 140A** Transp Climate Cont Lab  
This course provides the opportunity to continue mastering the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis and repair of climate control components and systems, recovery/recycling of refrigerants, and safety and environmental regulations. Upon completion, students should be able to diagnose and repair vehicle climate control systems.

**TRN 145** Advanced Transp Electronics  
Prerequisites: TRN 120  
This course covers advanced transportation electronic systems including programmable logic controllers, on-board data networks, telematics, high voltage systems, navigation, collision avoidance systems and electronic accessories. Topics include interpretation of wiring schematics, reprogramming PLCs, diagnosing and testing data networks and other electronic concerns. Upon completion, students should be able to reprogram PLCs, diagnose and test data networks and other electronic concerns, and work safely with high voltage systems.
This course introduces students to personal computer literacy and Internet literacy with an emphasis on the transportation service industry. Topics include service information systems, management systems, computer-based systems, and PC-based diagnostic equipment. Upon completion, students should be able to access information pertaining to transportation technology and perform word processing.

This course covers the terms and procedures for welding various metals used in the transportation industry with an emphasis on personal safety and environmental health. Topics include safety and precautionary measures, setup/operation of MIG equipment, metal identification methods, types of welds/joints, techniques, inspection methods, cutting processes and other related issues. Upon completion, students should be able to demonstrate a basic knowledge of welding operations and safety procedures according to industry standards.

This course provides a laboratory experience for enhancing student skills in welding and cutting procedures associated with the transportation industry. Emphasis is placed on safety and precautionary measures, setup/operation of MIG equipment, metal identification, welds/joints, techniques, inspection of welds/joints, cutting processes and other related topics. Upon completion, students should be able to demonstrate a basic knowledge of welding operations and safety procedures according to industry standards.

This course provides an overview of the history of winemaking, fermentation, winery operations, and physiology of wine consumption. Emphasis is placed on the types of wines produced in the United States with particular attention to the wines of the Southeast. Upon completion, students should be familiar with general winemaking procedures.

This course introduces grape growing. Topics include botany, fruiting and rootstock cultivars; anatomy and physiology; history and distribution of grapes; wine classification; world growing areas including latitude, climate and soils; and common diseases and pests. Upon completion, students should be able to demonstrate an overall understanding of the viticulture field.

This course introduces winemaking practices. The topics of study include fruit choices and quality, crushing, fermenting, bottling, basic winemaking chemistry and microbiology. Upon completion, students should be able to demonstrate knowledge of the overall winemaking process.

This course introduces process applications and tools necessary for the satisfactory finishing of wines, preparatory to bottling, and to the bottling process itself. Processes covered are aspects of wine stabilization, fining and filtration, sterile filtration and bottling. Upon completion, students should be able to demonstrate understanding of the processes and competency with the necessary tools and techniques.

This course provides training in the operation and maintenance of wastewater treatment plants. Emphasis is placed on wastewater treatment systems, maintenance procedures, basic process control, and laboratory analyses used by operators of wastewater treatment facilities. Upon completion, students should be able to make operational control changes and minor mechanical repairs needed to ensure compliance with NPDES discharge permits.

This course provides practical training in the operation and maintenance of wastewater treatment plants. Emphasis is placed on the processes and competency with the necessary tools and equipment. Upon completion, students should be able to demonstrate knowledge of the overall wastewater treatment processes and be able to make operational control changes and minor mechanical repairs needed to ensure compliance with NPDES discharge permits.

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WEB 210  Web Design  2 2 0 0 3
This course introduces intermediate to advanced Web page design techniques. Topics include effective use of graphics, fonts, colors, navigation tools, advanced markup language elements, as well as a study of bad design techniques. Upon completion, students should be able to employ advanced design techniques to create high impact and highly functional Web pages.

WEB 220  Advanced Multimedia  2 2 0 0 3
Prerequisites: WEB 120
This is the second of two courses covering Internet multimedia. Topics include use of advanced Internet multimedia applications. Upon completion, students should be able to create interactive Internet multimedia presentations.

WEB 225  Content Management Sys  2 2 0 0 3
Prerequisites: WEB 110
This course introduces students to Content Management Systems (CMS) designed for the publication of Web content to Web sites. Topics include individual user accounts, administration menus, RSS-feeds, customizable layout, flexible account privileges, logging, logging systems, creating online forums, and modules. Upon completion, students should be able to register and maintain individual user accounts and create a business website and/or an interactive community website.

WEB 230  Implementing Web Serv  2 2 0 0 3
Prerequisites: NET 110 or NET 125
This course covers Web site and Web server architecture. Topics include installation, configuration, administration, and security of Web servers, services and sites. Upon completion, students should be able to effectively manage the Web services deployment lifecycle according to industry standards.

WEB 250  Database Driven Websites  2 2 0 0 3
Prerequisites: DBA 110
This course introduces dynamic (database-driven) website development. Topics include the use of basic database CRUD statements (create, read, update and delete) incorporated into web applications, as well as in software architecture principles. Upon completion, students should be able to design and develop database driven web applications according to industry standards.

WEB 260  E-Commerce Infrastructure  2 2 0 0 3
Prerequisites: WEB 250
This course introduces the concepts and tools to implement electronic commerce via the Internet. Topics include application and server software selection, securing transactions, use and verification of credit cards, publishing of catalogs, documentation, and site administration. Upon completion, students should be able to setup a working e-commerce Internet Web site.

WEB 285  Emerging Web Technologies  2 2 0 0 3
This course will explore, discuss, and research emerging technologies in the Web arena. Emphasis is placed on exposure to up-and-coming technologies relating to the Web, providing hands-on experience, and discussion of practical implications of these emerging fields. Upon completion, students should be able to articulate issues relating to these technologies.

WEB 287  Web E-Portfolio  1 2 0 0 2
This course covers the creation and organization of a web-based e-portfolio that includes a resume, references, and comprehensive academic and work samples. Emphasis is placed on creating an e-portfolio with solid design and demonstrable content, the production of a resume and self-promotional materials, and interview techniques. Upon completion, students should be able to present their own domain with included professional e-portfolio elements of resume, sample work, and related self-promotional materials.

WELDING

WLD 110  Cutting Processes  1 3 0 0 2
This course introduces oxy-fuel and plasma-arc cutting systems. Topics include safety, proper equipment setup, and operation of oxy-fuel and plasma-arc cutting equipment with emphasis on straight line, curve and bevel cutting. Upon completion, students should be able to oxy-fuel and plasma-arc cut metals of varying thickness.

WLD 112  Basic Welding Processes  1 3 0 0 2
This course introduces basic welding and cutting. Emphasis is placed on beads applied with gases, mild steel fillers, and electrodes and the capillary action of solder. Upon completion, students should be able to set up welding and oxy-fuel equipment and perform welding, brazing, and soldering processes. Upon completion, plumbing students should only be able to perform welding, brazing, and soldering processes.

WLD 113  Soldering and Brazing  1 2 0 0 2
This course covers procedures for cutting, soldering and brazing of pipe and tubing. Topics include safety, proper equipment setup, and operation of soldering and brazing equipment. Upon completion, students should be able to perform SMAW fillet and groove welds on carbon plate with prescribed electrodes.

WLD 117  Industrial SMAW  1 4 0 0 3
This course introduces the SMAW (stick) process for joining carbon steel components for industrial applications. Topics include padding, fillet, and groove welds in various positions with SMAW electrodes. Upon completion, students should be able to perform SMAW fillet and groove welds on carbon steel plate with prescribed electrodes.

WLD 121  GMAW (MIG) FCAW/Plate  2 6 0 0 4
This course introduces metal arc welding and flux core arc welding processes. Topics include equipment setup and fillet and groove welds with emphasis on application of GMAW and FCAW electrodes on carbon steel plate. Upon completion, students should be able to perform fillet welds on carbon steel with prescribed electrodes in the flat, horizontal, and overhead positions.

WLD 131  GTAW (TIG) Plate  2 6 0 0 4
This course introduces the gas tungsten arc (TIG) welding process. Topics include correct selection of tungsten, polarity, gas, and proper filler rod with emphasis placed on safety, equipment setup, and welding techniques. Upon completion, students should be able to perform GTAW fillet and groove welds with various electrodes and filler materials.

WLD 132  GTAW (TIG) Plate/Pipe  1 6 0 0 3
Prerequisite: WLD 131
This course is designed to enhance skills with the gas tungsten arc (TIG) welding process. Topics include setup, joint preparation, and electrode selection with emphasis on manipulative skills in all welding positions on plate and pipe. Upon completion, students should be able to perform GTAW welds with prescribed electrodes and filler materials on various joint geometry.

WLD 141  Symbols and Specifications  2 2 0 0 3
This course introduces the basic symbols and specifications used in welding. Emphasis is placed on interpretation of lines, notes, welding symbols, and specifications. Upon completion, students should be able to read and interpret symbols and specifications commonly used in welding.

WLD 151  Fabrication I  2 6 0 0 4
This course introduces the basic principles of fabrication. Emphasis is placed on safety, measurement, layout techniques, cutting, joining
techniques, and the use of fabrication tools and equipment. Upon completion, students should be able to perform layout activities and operate various fabrication and material handling equipment.

WLD 212 Inert Gas Welding 13002
This course introduces inert gas-shielded welding methods (MIG/TIG). Topics include correct selection of consumable and non-consumable electrodes, equipment setup, safety, and welding techniques. Upon completion, students should be able to perform inert gas welding in flat, horizontal, and overhead positions.

WLD 214 Sanitary Welding 26004
This course covers the requirements for gas tungsten arc welding (TIG) of austenitic stainless steel tube, pipe and plate. Topics include correct selection of tungsten, polarity, gas and proper filler rod with emphasis placed on safety, equipment set-up and welding techniques. Upon completion, students should be able to perform TIG welds with various electrodes and filler materials on austenitic stainless steel tube, pipe, and plate.

WLD 215 SMAW (stick) Pipe 19004
This course covers the knowledge and skills that apply to welding pipe. Topics include pipe positions, joint geometry, and preparation with emphasis placed on bead application, profile, and discontinuities. Upon completion, students should be able to perform SMAW welds to applicable codes on carbon steel pipe with prescribed electrodes in various positions.

WLD 251 Fabrication II 16003
Prerequisite: WLD 151
This course covers advanced fabrication skills. Topics include advanced layout and assembly methods with emphasis on the safe and correct use of fabrication tools and equipment. Upon completion, students should be able to fabricate projects from working drawings.

WLD 261 Certification Practices 13002
Prerequisites: WLD 115, WLD 121 and WLD 131
This course covers certification requirements for industrial welding processes. Topics include techniques and certification requirements for pre-qualified joint geometry. Upon completion, students should be able to perform welds on carbon steel plate and/or pipe according to applicable codes.

WLD 262 Inspection and Testing 22003
This course introduces destructive and non-destructive testing methods. Emphasis is placed on safety, types and methods of testing, and the use of testing equipment and materials. Upon completion, students should be able to understand and/or perform a variety of destructive and non-destructive testing processes.

WLD 270 Orbital Welding TIG/Pipe 26004
This course introduces automated tungsten inert gas (TIG) welding hardware, equipment, and processes required to apply specific, accurate, automated, and consistently repetitive pipe welds. Emphasis is placed on proper identification of automated welding process variables, how each relates to the functionality of orbital equipment and components, and how changes in variables directly influence weld quality. Upon completion, students should be able to produce quality pipe welds through the appropriate operation and control of automated TIG welding equipment.