

Description of Courses

Continuing Education and Community Services Programs

In order to provide the widest possible diversification of educational opportunity, Virginia Western Community College schedules credit and noncredit courses and programs to meet educational and training needs outside the realm of traditional college studies. These include classes, institutes, forums, workshops, lectures, and courses to provide: (1) individual cultural enrichment; (2) individual job skill improvement; (3) hobby and leisure-time activity training; (4) service to business and industry in upgrading employee skills; and (5) special services focused on societal and community development. State general-fund tax dollars are not used to support noncredit community service programs.

General Course Information

Course Numbers

Courses numbered 01-09 are developmental studies courses. These courses are designed to prepare students for college-level courses (primarily in the areas of English and mathematics). The credits earned in these courses are not applicable toward associate degree programs. These courses are graded on a Satisfactory/ Unsatisfactory basis and they do not affect students' grade point average. Students enrolled in developmental courses who do not achieve a Satisfactory (S) grade should re-enroll in order to complete all course objectives. Students ordinarily may repeat a course only once (refer to the policy on Repeating a Course).

Courses numbered 10-99 are basic occupational courses for certificate programs. The credits earned in these courses are applicable toward diploma and certificate programs but are not applicable toward an associate degree.

Courses numbered 100-199 are freshman courses applicable toward an associate degree or certificate, and courses numbered 200-299 are sophomore courses applicable toward an associate degree or certificate.

Course Credits

The credit for each course is indicated after the title in the course description. One credit is equivalent to one collegiate semester hour.

Course Hours

The number of lecture hours in class each week (including lecture, seminar, and discussion hours) and/or the number of laboratory hours in class each week (including laboratory, shop, supervised study, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also "contact" hours because it is time spent under the direct supervision of a faculty member.

Course Prerequisites

If any prerequisites are required before enrolling in a course, these prerequisites will be identified in the course description. Courses in special sequences (usually listed as I-II-III) require that prior courses or their equivalent be completed before enrolling in the advanced courses in that sequence. When corequisites are required for a course, usually the corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the academic deans and the Vice President of Academic and Student Affairs.

General Usage Courses

The following "General Usage Courses" apply to multiple curricula and all prefix disciplines. General usage courses may be repeated for credit, and may include lecture, laboratory, out-of-class study, or a combination thereof.

(Insert appropriate prefix) 90, 190, 290 Coordinated Internship in (Insert appropriate discipline) (1-5 CR). Supervises on-the-job training in selected business, industrial, or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(Insert appropriate prefix) 93, 193, 293 Studies in (Insert appropriate discipline) (1-5 CR). Covers new content not covered in existing courses in the discipline. Allows instructor to explore content and instructional methods to assess the course's viability as a permanent offering. A "Studies in" course is intended as an experimental course to test its viability as a permanent offering. Each offering of the course must be approved by the Chief Academic Officer or designee. An experimental course may be offered twice, after which

the course must be approved under the appropriate discipline according to VCCS processes for adding new courses to the Master Course File. Variable hours per week.

(Insert appropriate prefix) 95, 195, 295 Topics in *(Insert appropriate discipline)* (1–5 CR). Provides an opportunity to explore topic areas of an evolving nature or of short-term importance in the discipline. Variable hours per week. A “Topics in” course is intended to cover topics of an evolving nature or of short-term importance in the discipline. The course shall be approved by the academic Vice President or designee for a period up to two years. The Chief Academic Officer or designee may approve an extension of another two-year period, after which the course must be approved under the appropriate discipline according to VCCS processes for adding new courses to the Master Course File.

(Insert appropriate prefix) 96, 196, 296 On-site Training in *(Insert appropriate discipline)* (1–5 CR). Offers opportunities for career orientation and training without pay in selected businesses and industry. Supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week.

(Insert appropriate prefix) 97, 197, 297 Cooperative Education in *(Insert appropriate discipline)* (1–5 CR). Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week.

(Insert appropriate prefix) 98, 198, 298 Seminar and Project in *(Insert appropriate discipline)* (1–5 CR). Requires completion of a project or research report related to the student’s occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(Insert appropriate prefix) 99, 199, 299 Supervised Study in *(Insert appropriate discipline)* (1–5 CR). Assigns problems for independent study outside the normal classroom setting under the guidance and direction of an instructor. Incorporates prior experience and instruction in the discipline. Variable hours per week. Exceptions to the credit limit may be granted by the Chief Academic Officer.

ACC- Accounting

ACC 110 Introduction to Computerized Accounting (1 CR) Introduces the computer in solving accounting problems. Focuses on the operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Lecture 1 hour per week.

ACC 124 Payroll Accounting (3 CR) Prerequisite: MTE 1, 2, and 3. Presents accounting systems and methods used in computing and recording payroll to include payroll taxes and compliance with federal and state legislation. Lecture 3 hours per week.

ACC 211 Principles of Accounting I (4 CR) Prerequisite: MTE 1, 2 and 3. Presents accounting principles and their application to various businesses. Covers the accounting cycle, income determination, and financial reporting. Studies services, merchandising, and includes internal controls. Computerized component is included. Lecture 4 hours per week.

ACC 212 Principles of Accounting II (4 CR) Prerequisites: ACC 211. Continues Accounting Principles 211 with emphasis on the application to partnerships, corporations and the study of financial analysis. Includes an introduction to cost and managerial accounting. Computerized component is included. Lecture 4 hours per week.

ACC 215 - Computerized Accounting (3 CR) Prerequisite or corequisite ACC 211 or equivalent. Introduces the computer in solving accounting problems. Focuses on operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Lecture 3 hours per week.

ACC 221 Intermediate Accounting I (4 CR) Prerequisites: ACC 212 or equivalent and BUS 125. Offered in fall semester only. Covers accounting principles and theory, including a review of the accounting cycle and accounting for current assets, current liabilities and investments. Introduces various accounting approaches and demonstrates the effect of these approaches on the financial statement users. Lecture 4 hours per week.

ACC 231 Cost Accounting I (3 CR) Prerequisite: ACC 212 or equivalent. Offered in fall semester only. Studies cost-accounting methods and reporting

as applied to job order, process, and standard cost accounting systems. Includes cost control and other topics. Lecture 3 hours per week.

ACC 261 Principles of Federal Taxation I (3 CR)

Prerequisite: ACC 211. Presents the study of federal taxation as it relates to individuals and related entities. Includes tax planning, compliance and reporting. Lecture 3 hours per week.

ADJ - Administration of Justice

ADJ 100 Survey of Criminal Justice (3 CR)

Presents an overview of the United States criminal justice system; introduces the major system components—law enforcement, judiciary, and corrections. Lecture 3 hours per week.

ADJ 105 The Juvenile Justice System (3 CR)

Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Lecture 3 hours per week.

ADJ 107 Survey of Criminology (3 CR) Surveys the volume and scope of crime; considers a variety of theories developed to explain the causation of crime and criminality. Lecture 3 hours per week.

ADJ 120 Introduction to Courts (3 CR) Presents an overview of the American judiciary (the federal and 50 state judicial systems) with emphasis on criminal court structures, functions, and personnel; surveys the judicial system in the Commonwealth of Virginia. Lecture 3 hours per week.

ADJ 130 Introduction to Criminal Law (3 CR) Surveys the general principles of American criminal law, elements of major crimes, and basic steps of prosecution procedure. Lecture 3 hours per week.

ADJ 140 Introduction to Corrections (3 CR) Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system. Lecture 3 hours per week.

ADJ 227 Constitutional Law for Justice

Personnel (3 CR) Surveys the basic guarantees of liberty described in the U.S. Constitution and the historical development of these restrictions on government power, primarily through U.S. Supreme

Court decisions. Reviews rights of free speech, press, assembly, as well as criminal procedure guarantees (to counsel, jury trial, habeas corpus, etc.) as they apply to the activities of those in the criminal justice system. Lecture 3 hours per week.

ADJ 229 Law Enforcement and the

Community (3 CR) Considers current efforts by law enforcement personnel to achieve an effective working relationship with the community. Surveys and analyzes various interactive approaches of law enforcement agencies and the citizenry they serve. Lecture 3 hours per week.

ADJ 232 Domestic Violence (3 CR)

Surveys historical issues that have affected family violence. Examines current trends in the context of the criminal justice system. Lecture 3 hours per week.

ADJ 234 Terrorism and Counter-Terrorism

(3 CR) Surveys the historical and current practices of terrorism that are national, transnational, or domestic in origin. Includes biological, chemical, nuclear, and cyber-terrorism. Teaches the identification and classification of terrorist organizations, violent political groups and issue-oriented militant movements. Examines investigative methods and procedures utilized in counter terrorist efforts domestically and internationally. Lecture 3 hours per week.

ADJ 236 Principles of Criminal Investigation

(3 CR) Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence. Lecture 3 hours per week.

ADJ 237 Advanced Criminal Investigation

(3 CR) Prerequisite: ADJ 236 or division approval. Introduces specialized tools and scientific aids used in criminal investigation. Applies investigative techniques to specific situations and preparation of trial evidence. Lecture 3 hours per week.

AIR – Air Conditioning and Refrigeration

AIR 121 Air Conditioning and Refrigeration I

(3 CR) Prerequisite: MTE 1, 2 and 3 or equivalent. Pre/Corequisite: ELE 130 or ELE 133. Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection.

Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 122 Air Conditioning and Refrigeration II

(3 CR) Prerequisite: AIR 121. Corequisite: ELE 130 or ELE 134. Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 123 Air Conditioning and Refrigeration III

(3 CR) Prerequisite: AIR 122. Psychometric properties of air, heat load and gain calculation, heated and chilled water systems, duct, design, air distribution and air comfort requirements. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 154 Heating Systems I (3 CR) Prerequisite: AIR 122 and AIR 238. Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 238 Advanced Troubleshooting and Service

(3 CR) Prerequisites: ELE 130 or ELE 133. Presents advanced service techniques on wide variety of equipment used in refrigeration, air conditioning, and phases of heating and ventilation and controls. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 281-282 Energy Management I-II

(3 CR) Introduces methodology for residential audits covering heat flow analysis, construction methods and materials. Discusses effects of life styles on energy consumption, conservation and practices, renewable energy sources, calculating cost and savings, interviewing and education techniques. Introduces commercial and industrial energy audits, methodology for the performance of audits covering heat flow analysis, construction methods and materials. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ARC - Architecture

ARC 100 Introduction to Architecture

(3 CR) Outlines history and impact of architecture. Emphasizes dynamics and social aspects of architecture and society; focuses on 19th and 20th century architectural forms. Lecture 3 hours per week.

ARC 121 Architectural Drafting I

(3 CR) Introduces techniques of architectural drafting, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working drawings. Requires development of a limited set of working drawings, including a site plan, related details, and pictorial drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ARC 133 Construction Methodology and Procedures I

(3 CR) Studies materials used in construction of buildings, covering foundations to structural framing systems. Includes appropriate use of materials for various construction types. Includes specification of materials and installation procedures; types of specifications and writing procedures; bidding procedures and, contract documents. Lecture 3 hours per week.

ARC 221 Architectural CAD Applications Software I

(3 CR) Prerequisite: DRF 202. Teaches the principles and techniques of architectural drawing practices through the use of architecture specific CAD software. Utilizes the commands and features of the software to generate drawings that emphasize architectural design and structural systems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ART – Art

ART 101-102 History and Appreciation of Art I-II

(3 CR, 3 CR) Presents history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to present. Lecture 3 hours per week.

ART 121-122 Drawing I-II

(3 CR, 3 CR) Prerequisite for ART 122: ART 121. Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone, and composition as applied to still life, landscape, and the figure. Uses

drawing media such as pencil, charcoal, ink wash, and color media. Includes field trips and gallery assignments as appropriate. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 131-132 Fundamentals of Design I-II

(3 CR, 3 CR) Prerequisite for ART 132: ART 131. Explores the concepts of two- and three-dimensional design and color. May include field trips as required. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 140 Introduction to Graphic Skills (3 CR)

Teaches basic studio skills and concepts. Emphasizes concept development and problem solving using traditional art materials and computer techniques. Uses current graphic software applications. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ART 141 Typography I (3 CR) Prerequisites:

ART 131 and ART 140. Studies the history of letter forms and typefaces and examines their uses in contemporary communications media. Emphasizes applications to specific design problems. Includes identification and specification of type, and uses current technologies for copy fitting and hands-on typesetting problems. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

ART 221-222 Drawing III-IV (3 CR, 3 CR)

Prerequisites: ART 121 and ART 122 for ART 221; ART 221 for ART 222. Introduces advanced concepts and techniques of drawing as applied to figure, still life, and landscape. Gives additional instruction in composition, modeling, space, and perspective. Encourages individual approaches to drawing. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 241-242 Painting I-II (3 CR, 3 CR)

Prerequisites: For ART 241, prerequisite is ART 122 or divisional approval; for ART 242, the prerequisites are ART 122, ART 241 or divisional approval. Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 243-244 Watercolor I-II (3 CR, 3 CR)

Prerequisites: For ART 243, prerequisite is ART 131 or divisional approval; for ART 244: the prerequisites are ART 131, ART 243 or divisional approval. Presents abstract and representational painting in watercolor, with emphasis on design, color, composition, technique, and value. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 247 Painting Technique for Illustrators

(3 CR) Prerequisites: ART 131-132; ART 241 or ART 243 or divisional approval. Introduces materials and techniques used by the illustrator. Includes water-soluble paints (watercolor, acrylic, gouache), oil-based paints, and mixed media. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 250 History of Design (3 CR) Surveys the development of graphic design and illustration with emphasis on the 19th and 20th centuries. Analyzes the work of outstanding designers and illustrators. Lecture 3 hours per week.

ART 251-252 Communication Design I-II

(3 CR, 3 CR) Prerequisites: For ART 251 and 252: ART 131-132, ART 140, and ART 141. Studies principles of visual communications as applied to advertising in newspapers, magazines, direct mail advertising, house organs, etc.; studies these principles through both print design and web design. Analyzes the influence of contemporary art on design. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

ART 282 Graphic Techniques (3 CR) Prerequisites:

ART 140, ART 132, and ART 141. Focuses on using drawing instruments and materials. Introduces printing processes and mechanics of reproduction. Focuses on production and prepress issues as well as various technologies within the printing field. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ART 283-284 Computer Graphics I-II (3 CR,

3 CR) Prerequisite: ART 140. Utilizes microcomputers and software to produce computer graphics. Employs techniques learned to solve studio projects, which reinforce instruction and are appropriate for portfolio use. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

ART 287 Portfolio and Resume Preparation

(3 CR) Prerequisites: ART 141, ART 251, ART 282, and ART 283. Focuses on portfolio preparation, resume writing, and job interviewing for students. Recommended for final semester program students. Requires divisional approval. Lecture 1 hour. Studio instruction 2 hours. Total 3 hours per week.

ASL – American Sign Language

ASL 101-102 American Sign Language I-II

(3 CR) ASL 102 prerequisite: ASL 101. Introduces the fundamentals of American Sign Language (ASL) used by the Deaf Community, including basic vocabulary, syntax, fingerspelling, and grammatical non-manual

signals. Focuses on communicative competence. Develops gestural skills as a foundation for ASL enhancement. Introduces cultural knowledge and increases understanding of the Deaf Community. Lecture 3 hours per week.

ASL 201 American Sign Language III (3 CR)

Prerequisites: ASL 102. Develops vocabulary, conversational competence, and grammatical knowledge with a total immersion approach. Introduces increasingly complex grammatical aspects including those unique to ASL. Discusses culture and literature. Contact with the Deaf Community is encouraged to enhance linguistic and cultural knowledge. Lecture 3 hours per week.

AST – Administrative Support Technology

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

AST 102 Keyboarding II (3 CR) Prerequisite: AST 101. Develops keyboarding and document production skills with emphasis on preparation of specialized business documents. Continues skill-building for speed and accuracy. Lecture 3 hours per week.

AST 107 Editing/Proofreading Skills (3 CR) Develops skills essential to creating and editing business documents. Covers grammar, spelling, diction, punctuation, capitalization, and other usage problems. Lecture 3 hours per week.

AST 113 Keyboarding for Speed and Accuracy (1 CR) Prerequisite: AST 101 or equivalent. Focuses on improving keyboarding speed and accuracy through assigned exercises that diagnose problem areas. Emphasizes increased productivity through improved speed and accuracy. Lecture 1 hour per week.

AST 114 Keyboarding for Information Processing (2 CR) Teaches the alphabetic and numeric keys; develops correct techniques and competency in the use of computer keyboards. May include basic correspondence and report formats. Lecture 2 hours per week.

AST 141 Word Processing I (Microsoft® Word)

(3 CR) Prerequisite: AST 101 or equivalent. Teaches creating and editing documents, including line and page layouts, columns, fonts, search/replace, cut/paste, spell/ thesaurus, and advanced editing/formatting features of word processing software. Lecture 3 hours per week.

AST 154 Voice Recognition Applications (1 CR)

Teaches the computer user to use the voice as an input device to compose documents and to give commands directly to the computer. Lecture 1 hour per week.

AST 205 Business Communication (3 CR)

Prerequisites: A placement recommendation for ENG 111 or successful completion of all required developmental English courses. Teaches techniques of oral and written communications. Emphasizes writing and presenting business-related materials. Lecture 3 hours per week.

AST 232 Microcomputer Office Application

(3 CR) Prerequisites: AST 101 and AST 141. Teaches production of business documents using presentations, word processing, databases, and spreadsheets. Emphasizes document production to meet business and industry standards. Lecture 3 hours per week.

AST 236 Specialized Software Applications

(3 CR) Prerequisites: AST 101 and AST 154. Teaches specialized integrated software applications on the microcomputer using web page design and desktop publishing. Emphasizes document production to meet business and industry standards. Lecture 3 hours per week.

AST 238 Word Processing Advanced Operations

(3 CR) Prerequisite: AST 141. Teaches advanced word processing features including working with merge files, macros, and graphics; develops competence in the production of complex documents. Lecture 3 hours per week.

AST 243 Office Administration I (3 CR)

Prerequisite: AST 101. Develops an understanding of the administrative support role and the skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes the development of critical-thinking, problem-solving, and job performance skills in a business office environment. Lecture 3 hours per week.

AST 244 Office Administration II (3 CR)

Prerequisite: AST 243 or equivalent. Enhances skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes administrative and supervisory role of the office professional. Includes travel and meeting planning, office budgeting and financial procedures, international issues, and career development. Lecture 3 hours per week.

AST 253 Advanced Desktop Publishing I (3 CR)

Prerequisite AST 101 or equivalent and experience in using a word processing package. Introduces specific desktop publishing software. Teaches document layout and design, fonts, type styles, style sheets, and graphics. Lecture 3 hours per week.

AUB - Auto Body

AUB 116 Auto Body Repair (4 CR) Teaches collision straightening procedures and use of equipment, planning repair procedures, disassembly techniques, body fastening systems, glass removal and replacement and panel repair and alignment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT – Automotive Analysis and Repair**AUT 101 Introduction to Automotive Systems** (4 CR)

Introduces fundamental systems of automobile, the engine fuel, exhaust, electric, ignition, lubrication, cooling, transmission, steering, brake and suspension systems. Teaches theory and function of each system. Demonstrates operation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 126 Auto Fuel and Ignition Systems (5 CR)

Prerequisite: AUT 241. Studies automobile ignition and fuel systems, their functions in operation of engine. Includes carburetors, fuel pumps, ignition systems, troubleshooting, engine test and adjustment, tune-up. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

AUT 241 Automotive Electricity I (4 CR)

Introduces electricity and magnetism, symbols, and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments, and gauges and accessories. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 251 Automatic Transmissions (3 CR)

Studies several types of automatic transmissions,

torque converters, and their principles of operation. Includes adjustment, maintenance, and rebuilding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 265 Automotive Braking System (4 CR)

Presents operation, design, construction, repair, and servicing of braking system, including anti-lock brake systems (ABS). Explains uses of tools and test equipment, evaluation of test results, estimation of repair cost for power, standard, and disc brakes. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 266 Auto Alignment, Suspension and Steering (4 CR)

Introduces use of alignment equipment in diagnosing, adjusting, and repairing front and rear suspensions. Deals with repair and servicing of power and standard steering systems. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

BIO - Biology**BIO 1 Foundations of Biology** (4 CR)

Develops a basic understanding of plant and animal form, function, and relationships. Prepares students who have a deficiency in high school biology. May be repeated for credit. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BIO 100 Basic Human Biology (3 CR)

Presents basic principles of human anatomy and physiology. Discusses cells, tissues, and selected human systems. Lecture 3 hours per week.

BIO 101 General Biology I (4 CR)

Prerequisite: A placement recommendation for ENG 111 or successful completion of all required developmental English courses. Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function, and evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 102 General Biology II (4 CR)

Prerequisite: BIO 101 or equivalent. Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function, and evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 141 Human Anatomy and Physiology I

(4 CR) Prerequisite: BIO 101 or high school Biology within the past 5 years. Integrates anatomy and physiology of cells, tissues, organs, and systems of the body. Integrates concepts of chemistry, physics and pathology. Lecture 3 hours per week. Laboratory 2 hours per week. Total 5 hours per week.

BIO 142 Human Anatomy and Physiology II

(4 CR) Prerequisite: BIO 141 or equivalent. Integrates anatomy and physiology of cells, tissues, organs, and systems of the human body. Integrates concepts of chemistry, physics and pathology. Lecture 3 hours per week. Laboratory 2 hours per week. Total 5 hours per week.

BIO 145 Human Anatomy and Physiology for the Health Sciences

(4 CR) Introduces human anatomy and physiology primarily to those planning to pursue an AAS degree in nursing or other allied health professions. Covers basic chemical concepts, cellular physiology, as well as the anatomy and physiology of human organ systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BIO 193 Studies in Human Anatomy & Physiology

(4 CR) Presents a concise overview of anatomy and physiology, encompassing the musculoskeletal system and organ systems of the human body. Studying the systems at the cellular and gross level with an introduction to disease states. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BIO 206 Cell Biology

(4 CR) Prerequisite: one year of college biology or one year of college chemistry. Introduces the ultrastructure and functions of cells. Emphasizes cell metabolism, cell division, and control of gene expression. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 215 Plant Life of Virginia

(3 CR) Focuses on identification and ecological relationships of the native plants of Virginia. Emphasizes shrubs, vines, weeds, wildflowers, ferns, and mushrooms. Lecture 2 hours. Recitation and laboratory 3 hours. Total 5 hours per week.

BIO 220 Immunology (3 CR) Prerequisites: BIO 101 or equivalent and BIO 150, NAS 185 or equivalent. Provides students with an in-depth understanding of the mammalian immune system. Students begin with a detailed study of the immune system components and move on to an integrated look at the immune response

with respect to clinical applications and human health. Lecture 3 hours per week.

BIO 270 General Ecology

(4 CR) Prerequisite: BIO 101-102 or division approval. Studies interrelationships between organisms and their natural and cultural environments with emphasis on populations, communities, and ecosystems. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 271 Introduction to Ecological Systems

(4 CR) Prerequisites: BIO 101. Examines the basic biological, meteorological and geologic/geographic factors at play in determining various critical ecosystems. Emphasis on wetlands and wetlands reconstruction, endangered and threatened species habitats, and aquatic systems. Remote sensing technology and use of GIS in ecological management will be examined. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 285 Biological Problems in

Contemporary Society (3 CR) Discusses major biological problems facing society, which may include environmental and health concerns such as pollution, bioengineering, drug abuse, conservation, famine and others. Lecture 3 hours per week.

BIO 298 Seminar and Project

(1-5 CR) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

BLD - Building**BLD 110 - Introduction to Construction**

(3 CR) Covers basic knowledge and requirements needed in the construction trades. Introduces use of tools and equipment, with emphasis on construction safety, including personal and tool safety. Provides a working introduction to basic blueprint reading and fundamentals of construction mathematics. Lecture 3 hours per week.

BLD 111 Blueprint Reading and the Building

Code (3 CR) Introduces reading and interpreting various kinds of blueprints and working drawings with reference to local, state and national building codes. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

BLD 144 Plumbing Code and Certification

Preparation (3 CR) Teaches the use of the plumbing code standard book (BOCA), references standards, the reading and use of charts and tables, and preparation for the journeyman's certification and the cross-connection control certification test. Lecture 3 hours per week.

BLD 159 Mechanical Code and Certification

Preparation (3 CR) Discusses local, state, and national building codes as they relate to the installation, maintenance and repair of mechanical systems in residential and commercial buildings. Includes gas and oil burners, venting, flues and sizing of systems. Lecture 3 hours per week.

BCS – Broadcasting**BCS 110 Fundamentals in Video Production**

(4 CR) Studies the use of video equipment and the application of production techniques and aesthetics in electronic media, and develops fundamental production skills through hands on experience with cameras, video tape records, video seitcher, graphic computers, and lighting instruments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BCS 117 Electronic Journalism (3 CR) Prerequisite: ENG 111. Teaches and provides practical training in electronic news reporting, writing, editing, and stacking (organization). Studies electronic news ethics and responsible news gathering and reporting in a free society. Lecture 3 hours per week.

BCS 140 Introduction to Mass Media

(3 CR) Studies the development of mass media communication, including the history and technological evolution of print and electronic media. Emphasizes mass communication in the United States. Lecture 3 hours per week.

BSK - Basic Skills

BSK 1 Whole Numbers (1 CR) Covers whole number principles and computations. Credits not applicable toward graduation. Lecture 1 hour per week.

BUS – Business Management and Administration**BUS 100 Introduction to Business** (3 CR)

Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential

elements of business organization, production, human resource management, marketing, finance, and risk management. Develops business vocabulary. Lecture 3 hours per week.

BUS 111 Principles of Supervision I (3 CR)

Teaches the fundamentals of supervision, including primary responsibilities of supervisors. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training/orientation, performance evaluation, and effective employee/supervisor relationships. Lecture 3 hours per week.

BUS 116 Entrepreneurship (3 CR)

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

BUS 125 Applied Business Mathematics (3 CR)

Prerequisite: MTE 1, 2 and 3. Applies mathematical operations to business process and problems, such as wages and payroll, sales and property taxes, checkbook records and bank reconciliation, depreciation, overhead, distribution of profits and loss in partnerships, distribution of corporate dividends, commercial discounts, markup, markdown, simple interest, present values, bank discount notes, multiple payment plans, compound interest, annuities, sinking funds, and amortization. Lecture 3 hours per week.

BUS 165 Small Business Management

(3 CR) Prerequisite or corequisite: ACC 110 or ACC 211. Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

BUS 200 Principles of Management (3 CR)

Teaches management and the management functions of planning, organizing, leading, and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Lecture 3 hours per week.

BUS 202 Applied Management Principles

(3 CR) Prerequisite: BUS 100, BUS 111 or BUS 200. Focuses on management practices and issues. May use case studies and/or management decision models to analyze problems in developing and implementing a business strategy while creating and maintaining competitive advantage. Lecture 3 hours per week.

BUS 205 Human Resource Management (3 CR)

Introduces employment, selection, and placement of personnel, forecasting, job analysis, job descriptions, training methods and programs, employee evaluation systems, compensation, benefits, and labor relations. Lecture 3 hours per week.

BUS 221 Business Statistics I (3 CR) Prerequisite:

MTH 163 or divisional approval. Focuses on statistical methodology in the collection, organization, presentation, and analysis of data; concentrates on measures of central tendency, dispersion, probability concepts and distribution, sampling, statistical estimation, normal and T distribution and hypotheses for means and proportions. Lecture 3 hours per week.

BUS 222 - Business Statistics II (3 CR)

Prerequisite BUS 221 or division approval. Continues study of inferential statistics and application of statistical techniques and methodology in business. Includes analysis of variance, regression and correlation measurement of business and economic activity through the use of index numbers, trend, cyclical, and seasonal effects and the Chi-Square distribution and other non-parametric techniques. Lecture 3 hours per week.

BUS 225 Applied Business Statistics (3 CR)

Prerequisites: MTH 120 and BUS 125. Introduces statistics as a tool in decision making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index number, and time series analysis. Lecture 3 hours per week.

BUS 241 Business Law I (3 CR) Develops a basic

understanding of the US business legal environment. Introduces property and contract law, agency and partnership liability, and government regulatory law. Students will be able to apply these legal principles to landlord/tenant disputes, consumer rights issues, employment relationships, and other business transactions. Lecture 3 hours per week.

BUS 285 - Current Issues in Management

(3 CR) Pre/Corequisite: BUS 205. Designed as a capstone course for management majors, the course is

designed to provide an integrated perspective of the current issues and trends in business management. Contemporary issues will be explored in a highly participatory class environment. Lecture 3 hours per week.

CHD – Early Childhood Development**CHD 118 Language Arts for Young Children**

(3 CR) Emphasizes the early development of children's language and literacy skills. Presents techniques and methods for supporting all aspects of early literacy. Surveys children's literature, and examines elements of promoting oral literacy, print awareness, phonological awareness, alphabetic principle, quality story-telling and story reading. Addresses strategies for intervention and support for exceptional children and English Language Learners. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 119 Introduction to Reading Methods

(3 CR) Prerequisite: ENG 111. Focuses on promoting language and literacy skills as the foundation for emergent reading. Emphasizes phonetic awareness and alphabetic principle, print awareness and concepts, comprehension and early reading and writing. Addresses strategies for intervention and support for exceptional children and English Language Learners. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 120 Introduction to Early Childhood Education (3 CR) Introduces early childhood

development through activities and experiences in early childhood, pre-kindergarten, kindergarten, and primary programs. Investigates classroom organization and procedures, and use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures. Lecture 3 hours per week.

CHD 145 Teaching Art, Music, and Movement to Children (3 CR) Focuses on children's exploration,

play and creative expression in the areas of art, music and movement. Emphasis will be on developing strategies for using various open-ended media representing a range of approaches in creative thinking. Addresses strategies for intervention and support for exceptional children and English Language Learners. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 146 Math, Science, and Social Studies for Children (3 CR) Provides experiences in content, methods, and materials for the development of math, science, and social studies skills in children. Emphasis will be on developing strategies for using various resources to facilitate children's construction of knowledge. Addresses strategies for intervention and support for children with special needs and English Language Learners. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 165 Observation and Participation in Early Childhood/Primary Settings (3 CR) Prerequisites or corequisites: CHD 120 and CHD 215 or divisional approval. Focuses on observation as the primary method for gathering information about children in early childhood settings. Emphasizes development of skills in the implementation of a range of observation techniques. Students spend one hour each week in a seminar session in addition to 4 clock hours in the field. May be taken again for credit. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CHD 166 Infant and Toddler Programs (3 CR) Examines child growth and development from birth to 36 months. Focuses on development in the physical, cognitive, social, emotional, and language domains. Emphasizes the importance of the environment and relationships for healthy brain development during the child's first three years of life. Investigates regulatory standards for infant/toddler caregiving. Lecture 3 hours per week.

CHD 205 Guiding the Behavior of Children (3 CR) Explores the role of the early childhood educator in supporting emotional and social development of children, and in fostering a sense of community. Presents practical strategies for encouraging prosocial behavior, conflict resolution and problem solving. Emphasizes basic skills and techniques in child guidance. Lecture 3 hours per week.

CHD 210 Introduction to Exceptional Children (3 CR) Reviews the history of and legal requirements for providing intervention and educational services for young children with special needs. Studies the characteristics of children with a diverse array of needs and developmental abilities. Explores concepts of early intervention, inclusion, guiding behavior and adapting environments to meet children's needs. Lecture 3 hours per week.

CHD 215 Models of Early Childhood Education Programs (3 CR) Surveys and discusses various models and theories of early childhood

education programs including current trends and issues. Reviews state licensing and staff requirements. Lecture 3 hours per week.

CHD 216 Early Childhood Programs, School, and Social Change (3 CR) Explores methods of developing positive, effective relations with families to enhance their developmental goals for children. Considers culture and other diverse needs, perspectives, and abilities of families and educators. Emphasizes advocacy and public policy awareness as an important role of early childhood educators. Describes risk factors and identifies community resources. Lecture 3 hours per week.

CHD 265 Advanced Observation and Participation in Early Childhood Primary Settings (3 CR) Prerequisites: CHD 120, CHD 165 and CHD 215 or divisional approval. Focuses on implementation of activity planning and observation of children through participation in early childhood settings. Emphasizes responsive teaching practices and assessment of children's development. Reviews legal and ethical implications of working with children. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CHD 270 Administration of Early Childhood Programs (3 CR) Examines skills needed for establishing and managing early childhood programs. Emphasizes professionalism and interpersonal skills, program planning, staff selection and development, creating policies, budgeting, and developing forms for recordkeeping. Lecture 3 hours per week.

CHD 298 Project in Portfolio Development (1 CR) Prerequisites: CHD 118, CHD 120, CHD 145-146, CHD 165-166, CHD 210, CHD 215-216, and CHD 270. Corequisites: CHD 119, CHD 205 and CHD 265. This is considered a capstone course and will require cumulative work from previous courses. Focuses on the development of a portfolio to demonstrate professional competence in the field of early care and education. Lecture 1 hour per week.

CHM - Chemistry

CHM 5 Developmental Chemistry for Health Sciences (4 CR) Prerequisites: MTE 1, 2, 3, 4, 5 and 6; and a placement recommendation for ENG 111 or successful completion of all required developmental English courses. Introduces basic principles of inorganic, organic, and biological chemistry. Emphasizes applications to the health sciences. Can be used as a preparatory course for CHM 111- 112. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CHM 111 College Chemistry I (4 CR)

Prerequisites: MTE 1, 2, 3, 4, 5, 6, 7, 8 and 9; and a placement recommendation for ENG 111 or successful completion of all required developmental English courses. High school chemistry or CHM 5 recommended but not required. Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 112 College Chemistry II (4 CR) Prerequisite:

CHM 111. Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 241 Organic Chemistry I (3 CR) Prerequisite:

CHM 112 or equivalent. Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Lecture 3 hours per week.

CHM 242 Organic Chemistry II (3 CR)

Prerequisite: CHM 241. Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Lecture 3 hours per week.

CHM 245 Organic Chemistry Laboratory I

(2 CR) Prerequisite: CHM 112. Corequisite: CHM 241. Includes qualitative organic analysis. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

CHM 246 Organic Chemistry Laboratory II

(2 CR) Prerequisite: CHM 241 and CHM 245. Corequisite: CHM 242. Includes qualitative organic analysis. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

CHM 260 Introductory Biochemistry (3 CR)

Prerequisite CHM 112 or divisional approval. Explores fundamentals of biological chemistry. Includes study of macromolecules, metabolic pathways, and biochemical genetics. Lecture 3 hours per week.

CHM 261 Biochemistry Lab (1 CR) Provides

hands on lab experiences designed to reinforce the fundamentals of biological chemistry taught in CHM 260 such as biochemistry assays, enzyme kinetics, enzyme purification, chromatography, electrophoresis and use of western blots. Laboratory 3 hours per week.

CIV - Civil Engineering Technology**CIV 135 Construction Management and Estimating** (3 CR) Teaches the equipment and

methods used in construction. Includes principles and economics of construction, planning and management, and principles of estimating primarily using highway and building project examples. Lecture 3 hours per week.

CIV 171 Surveying I (3 CR) Prerequisite: MTH 115

or division approval. Introduces surveying equipment, procedures and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations and introduction to topography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CSC - Computer Science**CSC 201 Computer Science I** (4 CR) Corequisites:

CSC 100 or equivalent or divisional approval and MTH 173 or equivalent (MTH 175) or divisional approval. Introduces algorithm and problem-solving methods. Emphasizes structured programming concepts, elementary data structures and the study and use of a high level programming language. Lecture 4 hours per week.

CSC 202 Computer Science II (4 CR) Prerequisite:

CSC 201. Corequisite: MTH 174 or equivalent (MTH 176) or divisional approval. Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures. Lecture 4 hours per week.

CSC 205 Computer Organization (4 CR)

Examines the hierarchical structure of computer architecture. Focuses on multi-level machine organization. Uses a simple assembler language to complete programming projects. Includes processors, instruction, execution, addressing techniques, data representation and digital logic. Lecture 4 hours per week.

CST – Communication Studies and Theatre**CST 100 Principles of Public Speaking** (3 CR)

Applies theory and principles of public address with emphasis on preparation and delivery. Lecture 3 hours per week.

CST 105 Oral Communication (3 CR) Studies effective communication with emphasis on speaking and listening. Lecture 3 hours per week.

CST 130 - Introduction to the Theatre (3 CR) Surveys the principles of drama, the development of theatre production, and selected plays to acquaint the student with various types of theatrical presentations. Lecture 3 hours per week.

CST 131-132 Acting I-II (3 CR, 3 CR) Prerequisite for CST 132: CST 131. Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CST 136 - Theatre Workshop (1-6 CR) Enables students to work in various activities of play production. The student participates in performance, set design, stage carpentry, sound, costuming, lighting, stage managing, props, promotion, or stage crew. May be repeated for credit. Variable hours per week.

DNH – Dental Hygiene

DNH 111 Oral Anatomy (2 CR) Studies the morphology and function of the oral structures with emphasis on the primary and permanent dentition, eruption sequence, occlusion, and intra-arch relationships. Lecture 2 hours per week.

DNH 115 Histology/Head and Neck Anatomy (3 CR) Presents a study of the microscopic and macroscopic anatomy and physiology of the head, neck, and oral tissues. Includes embryologic development and histologic components of the head, neck, teeth, and periodontium. Lecture 3 hours per week.

DNH 120 Management of Emergencies (2 CR) Studies the various medical emergencies and techniques for managing emergencies in the dental setting. Additional practical applications and simulations of emergencies may be conducted to enhance basic knowledge from the one hour lecture component. Lecture 2 hours per week.

DNH 130 Oral Radiography for the Dental Hygienist (2 CR) Studies radiation physics, biology, safety, and exposure techniques for intra- and extra-oral radiographic surveys. Laboratory provides practice in exposure, processing methods, mounting, and interpretation of normal findings. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

DNH 141 Dental Hygiene I (5 CR) Introduces clinical knowledge and skills for the performance of dental hygiene services; basic skill components, lab manikins, and client practice. Lecture 3 hours. Clinic 6 hours. Total 9 hours per week.

DNH 142 Dental Hygiene II (5 CR) Prerequisite: DNH 141. Exposes students to instrument sharpening, time management, and client education techniques and methods. Provides supervised clinical practice in the dental hygiene clinic with emphasis on developing client treatment and instrument skills. Lecture 2 hours. Clinic 9 hours. Total 11 hours per week.

DNH 145 General and Oral Pathology (2 CR) Prerequisite: DNH 115. Introduces general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to studying pathological conditions of the mouth, teeth, and their supporting structures. Lecture 2 hours per week.

DNH 146 Periodontics for Dental Hygienist (2 CR) Introduces the theoretical and practical study of various concepts/methods used in describing, preventing, and controlling periodontal disease. Presents etiology, microbiology, diagnosis, treatment and prognosis of diseases. Lecture 2 hours per week.

DNH 150 Nutrition (2 CR) Studies nutrition as it relates to dentistry and general health. Emphasizes the principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 2 hours per week.

DNH 190 Dental Hygiene Coordinated Practice (3 CR) Prerequisite: DNH 142. Continues supervised clinical practice in the dental hygiene clinic with emphasis on coordinating didactic and clinical skills, and refining client treatment skills. Introduces special needs clients and treatment modifications. Lecture 2 hours. Clinic 3 hours. Total 5 hours per week.

DNH 214 Practical Materials for Dental Hygiene (2 CR) Studies the current technologic advances, expanded functions, and clinical/laboratory materials used in dental hygiene practice. Provides laboratory experience for developing skills in the utilization and applications of these technologies and functions. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

DNH 216 Pharmacology (2 CR) Studies the chemical and therapeutic agents used in dentistry, including their preparation, effectiveness, and specific application. Lecture 2 hours per week.

DNH 226 Public Health Dental Hygiene I

(2 CR) Studies and compares concepts of health care delivery, applying public health delivery model. Utilizes epidemiologic methods, research and biostatistics as applied to oral health program planning, implementation, and evaluation. Incorporates and applies current health issues and trends. Lecture 2 hours per week.

DNH 227 Public Health Dental Hygiene II

(1 CR) Prerequisite: DNH 226. Applies concepts of public health program planning through student directed community projects with an emphasis on preventive oral health education. Includes development of table clinics, bulletin boards, and volunteer service in the community. Laboratory 3 hours per week.

DNH 230 Office Practice and Ethics (1 CR)

Studies the principles of dental ethics and economics as they relate to the dental hygienist. The course also includes a study of jurisprudence and office procedures. Lecture 1 hour per week.

DNH 235 Management of Dental Pain and Anxiety in the Dental Office (2 CR) Prerequisites:

DNH 115, DNH 120, and DNH 216. Provides a study of anxiety and pain management techniques used in dental care. Students will understand the necessary theory to appropriately treat, plan and successfully administer topical anesthesia, local anesthesia, and nitrous oxide/oxygen analgesia. Includes the components of pain, pain control mechanisms, topical anesthesia, local anesthesia and nitrous oxide/oxygen analgesia. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

DNH 244 Dental Hygiene IV (5 CR) Prerequisite:

DNH 190. Introduces advanced skills and the dental hygienists role in dental specialties. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasizes treatment of clients demonstrating periodontal involvement, stressing application and correlation of knowledge and skills from previous semesters. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DNH 245 Dental Hygiene V (5 CR) Prerequisite:

DNH 244. Exposes student to current advances in dentistry. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasis is placed on synthesis of knowledge from previous

semesters, treatment of clients with moderate to advanced periodontal involvement, and improving clinical speed while maintaining quality in preparation for practice. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DRF - Drafting**DRF 128 Geometric Dimensioning and Tolerancing** (3 CR) Prerequisite: DRF 201 or divisional approval.

Teaches use of a positional tolerance system, its relationship to coordinate tolerance systems, and other aspects of industry standard drafting practices based on the current ASME Y14.5 standard. Covers the standard dimensioning practices in the architectural, civil, mechanical, electrical and other industries. Lecture 3 hours per week.

DRF 161 Blueprint Reading I (2 CR) Teaches

the application of basic principles, visualization, orthographic projection, detail of drafting shop process and terminology, assembly drawings and exploded views. Considers dimensioning, changes, and corrections, classes of fits, tolerances and allowances, sections and convention in blueprint reading. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

DRF 201 Computer Aided Drafting and Design I (3 CR) Prerequisite: Basic computer

knowledge including file management, mouse usage, and keyboarding skills; MTE 1, 2 and 3 or divisional approval. Teaches computer-aided drafting concepts and equipment designed to develop a general understanding of components of a typical CAD system and its operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 202 Computer Aided Drafting and Design II (3 CR) Prerequisite: DRF 201 or divisional approval.

Teaches production drawings and advanced operations in computer aided drafting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 203 Computer Aided Drafting and Design III (3 CR) Prerequisite: DRF 202 or divisional approval.

Teaches advanced CAD applications. Includes customization and/or use of advanced software. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 226 Computer Aided Machining (3 CR)

Prerequisite: MEC 119 or divisional approval. Teaches use of software to create numerical machine code to drive CNC milling machines or lathes. Introduces software and techniques to create, edit and produce

CAD drawings, tool paths, and the numerical code for a CAM machine. Includes history, applications, hardware and software requirements, terminology, limitation and future trends. Reviews and builds on manual CNC programming methods. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

See Early Childhood Development (CHD)

ECO - Economics

ECO 120 Survey of Economics (3 CR) Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts. Lecture 3 hours per week.

ECO 201 Principles of Macroeconomics (3 CR) Introduces macroeconomics including the study of Keynesian, classical, monetarist principles and theories, the study of national economic growth, inflation, recession, unemployment, financial markets, money and banking, the role of government spending and taxation, along with international trade and investments. Lecture 3 hours per week.

ECO 202 Principles of Microeconomics (3 CR) Introduces the basic concepts of micro-economics. Explores the free market concepts with coverage of economic models and graphs, scarcity and choices, supply and demand, elasticities, marginal benefits and costs, profits, and production and distribution. Lecture 3 hours per week.

EDU - Education

EDU 100 Introduction to Education (1 CR) Provides an overview of teaching as a career with orientation to theories, practices, responsibilities, guidelines, current trends, and issues in education. Lecture 1 hour per week.

EDU 114 Driver Task Analysis (3 CR) Prerequisite: Must be eligible for ENG 03 and 05 or ESL 13. Introduces the "driver task" as related to the highway transportation system and factors that influences performance ability. Prepares students so they may be eligible to take certification exams for driving school instructors in both public and private schools. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 214 - Instructional Principles of Driver Education (3 CR) Prerequisite: EDU 114. Analyzes

rules and regulations that govern the conduct of Driver Education programs with special emphasis on organization and administration. Includes uses in the classroom, driving range and on the street. Prepares students so they may be eligible to take the state certification exam in driver education. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 287 - Instructional Design for Online Learning (3 CR) Prepares educators to design online courses that encourage active learning and student participation. Focuses on instructional design practices including the development of content tied to learning objectives and a peer-based approach to evaluating courses. Lecture 3 hours per week.

EGR - Engineering

EGR 105 Introduction to Problem Solving in Technology (1 CR) Teaches engineering problem solving, using hand held calculator. Applies computers to solving problems. Laboratory 3 hours per week.

EGR 120 Introduction to Engineering (2 CR) Prerequisite: EGR 124. Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software such as Inventor, MATLAB, Excel, and LabVIEW. Lecture 2 hours per week.

EGR 123 Introduction to Engineering Design (2 CR) Introduces the fundamental knowledge and experience needed to understand the engineering design process through the basics of electrical, computer, and mechanical systems. Includes the completion of a project in which a specific electromechanical robot kit will be analyzed, assembled, and operated. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

EGR 124 Introduction to Engineering and Engineering Methods (3 CR) Corequisites: MTH 175 and MTH 177. Introduces the engineering profession, professionalism, and ethics. Covers problem presentation, engineering calculations, digital computer applications, word processing, worksheets, programming in FORTRAN or C++ and elementary numerical methods. Lecture 3 hours per week.

EGR 126 Computer Programming for Engineers (3 CR) Corequisite: MTH 116 or equivalent.

Introduces computer, their architecture and software. Teaches program development using flowcharts. Solves engineering problems involving programming in languages such as FORTRAN, PASCAL, or C++. Lecture 3 hours per week.

EGR 140 Engineering Mechanics – Statics

(3 CR) Prerequisite: MTH 175 or equivalent. Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multiforce members and friction and internal forces. Lecture 3 hours per week.

EGR 206 Engineering Economy (3 CR)

Corequisite: MTH 116 or equivalent. Presents economic analysis of engineering alternatives. Studies economic and cost concepts, calculation of economic equivalence, comparison of alternatives, replacement economy, economic optimization in design and operation, depreciation, and after tax analysis. Lecture 3 hours per week.

EGR 216 Computer Methods in Engineering and Technology (3 CR)

Prerequisite: Basic computer knowledge including file management, mouse usage, and keyboarding skills. Corequisite: MTH 115. Provides advanced level experience in using a computer as a tool for solving technical problems and performing office functions. Includes computer hardware and operating system usage, structured programming in a selected high level language, use of word processing software, computer graphics and spreadsheets. Focuses on the analysis and solution of problems in engineering and technology. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EGR 245 Engineering Mechanics – Dynamics

(3 CR) Prerequisite: EGR 140. Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week.

EGR 246 Mechanics of Materials (3 CR)

Prerequisite: EGR 140. Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles. Lecture 3 hours per week.

EGR 250 Electrical Theory (3 CR) Corequisite: PHY 242, MTH 291. Designed for nonelectrical engineering majors. Presents fundamentals of DC and AC electric circuits, circuit laws and network theorems; operational amplifiers, energy storage elements; response of first- and second-order circuits; feedback; two-port network; AC steady state analysis. Lecture 3 hours per week.

EGR 251 Basic Electric Circuits I (3 CR)

Prerequisite: MTH 176 and 178. Corequisite: EGR 255. Teaches fundamentals of electric circuits. Includes circuit quantities of charge, current, potential, power and energy. Teaches resistive circuit analysis; Ohm's and Kirchoff's laws; nodal and mesh analysis; network theorems; RC, RL and RLC circuit transient response with constant forcing functions. Teaches AC steady-state analysis, power, and three-phase circuits. Presents frequency domain analysis, resonance, Fourier series, inductively coupled circuits, Laplace transform applications, and circuit transfer functions. Introduces problem solving using computers. Lecture 3 hours per week.

EGR 255 Electric Circuits Laboratory (1 CR)

Corequisite: EGR 251. Teaches principles and operation of laboratory instruments such as VOM, electronic voltmeters, digital multimeters, oscilloscopes, counters, wave generators and power supplies. Presents application to circuit measurements, including transient and steady-state response of simple networks with laboratory applications of laws and theories of circuits plus measurement of AC quantities. Laboratory 3 hours per week.

EGR 261 Signals and Systems (3 CR)

Prerequisite: EGR 251. Corequisite: MTH 291. Covers topics including Laplace transforms and Laplace transform analysis of circuits, time and frequency domain representation of linear systems, methods of linear systems analysis including convolution and Laplace transforms, frequency domain representation of signals including frequency response, filters, Fourier series, and Fourier transforms. Lecture 3 hours per week.

EGR 265 Digital Electronics and Logic Design (4 CR)

Teaches number representation in digital systems; Boolean algebra; design of digital circuits, including gates, flip-flops, counters, registers, architecture, microprocessors, input-output devices. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EGR 285 Capstone Project (1 CR)

Prerequisite: IND 290. Provides a capstone research project for the

final semester of the program, focusing inquiry upon an area of interest to the student or area relevant to their prospective career field. May include problem based research topics, internships, or other focused projects. Lecture 1 hour per week.

ELE – Electrical Technology

ELE 110 Home Electric Power (3 CR) Corequisite: ELE 133 or divisional approval. Covers the fundamentals of residential power distribution, circuits, panels, fuse boxes, breakers, and transformers. Includes study of the national electrical code, purpose, and interpretation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 130 Electricity (4 CR) Prerequisite: MTE 1, 2 and 3. Covers DC and AC theory (FOR NON-ELECTRICAL STUDENTS), with some introduction to electrical machines. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 133-134 Practical Electricity I-II (3 CR, 3 CR) Prerequisite: MTE 1, 2 and 3. Teaches the fundamentals of electricity, terminology, symbols, and diagrams. Includes principles essential to understanding general practices, safety, and the practical aspects of residential and non-residential wiring and electrical installation, including fundamentals of motors and controls. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 138 National Electrical Code (2 CR) Prerequisite: ELE 133 or divisional approval. Teaches purpose and interpretation of the National Electrical Code as well as familiarizations with various charts, code rulings, and wiring methods. Prepares the student to take the Journeyman-Level Exam. Lecture 2 hours per week.

ELE 147 Electrical Power and Control Systems (3 CR) Prerequisite: ELE 130, ELE 134 or equivalent. Reviews basic DC and AC circuits. Covers single-phase and three-phase AC power distribution systems, and protection devices, including types of AC motors. Presents analyzing and troubleshooting electrical control systems and motor protection devices. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 159 Electrical Motors (3 CR) Teaches practical applications and fundamentals of A.C. and D.C. machines. Includes the concepts of magnetism and generators used in electrical motor applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 176 Introduction to Alternative Energy Including Hybrid Systems (3 CR) Prerequisites: MTE 1, 2 and 3. Corequisite: ELE 130. Introduces Alternative Energy with an emphasis on solar photovoltaic systems, small wind turbines technology, the theory of PV technology, PV applications, solar energy terminology, system components, site analysis, PV system integration and PV system connections and small wind turbine technology site analysis. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 177 - Photovoltaic Energy Systems (4 CR) Teaches techniques for conduct site surveys, installing system components, installing inverters and performing system sizing and system maintenance. Introduces different battery configurations, and charge controllers. Introduces safety, system design and layout, National Electric Code, Component Selection, wiring and installation techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 178 Wind Turbine Technology (4 CR) Introduces many facets of the wind industry. Introduces the history and development of the wind systems as well as the future of the wind industry as the desire for alternative energy grows. Presents the terminology used in the application of wind systems. Identifies the various types of wind energy turbines and other topics as appropriate. Includes safety training. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 225 Electrical Control Systems (4 CR) Studies components, equipment and circuits that are used to control the operation of electrical machines. Explains the physical and operating characteristics of various electromagnetic, static, and programmable control devices. Investigates control schemes used to accomplish specific control objectives. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 239 Programmable Controllers (3 CR) Prerequisite: ELE 147 and ETR 280 or ELE 133 and ETR 141, or divisional approval. Examines installation, programming, interfacing, and concepts of troubleshooting programmable controllers. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 293 Studies in Electrical Power and Control Systems (3 CR) Prerequisite: ETR 114. Studies the theory and operation of rotating machines, transformers, AC power distribution and control systems used in industrial applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 298 Seminar and Project in Electrical Engineering (3CR) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. Lecture 3 hours per week.

EMS – Emergency Medical Technician

EMS 100 CPR for Healthcare Providers (1 CR) Provides instruction in Cardiopulmonary Resuscitation that meets current Emergency Cardiac Care (ECC) guidelines for Cardiopulmonary Resuscitation education for Healthcare Providers. Equivalent to HLT 105. Lecture 1 hour per week.

EMS 105 Basic Medication Administration Procedures (1 CR) Covers basic theory and practical application of medication and drug dosage, as well as calculations. Direct application to the functional performance of the EMT Intermediate in the field and clinical settings is stressed. Lecture 1 hour per week.

EMS 110 Emergency Vehicle Operator's Course (EVOC) (1 CR) Prepares the student for certification in the operation of various emergency vehicles. Teaches proper operating procedures in both emergency and non-emergency situations. Lecture 1 hour per week.

EMS 111 Emergency Medical Technician–Basic (7 CR) Prerequisite: EMS 100 or equivalent or CPR certification at the Health Care Provider level. Co-requisite: EMS 120. Prepares student for certification as a Virginia and National Registry EMT-Basic. Focuses on all aspects of pre-hospital basic life support as defined by the Virginia Office of Emergency Medical Services curriculum for Emergency Medicine Technician Basic. Lecture 5 hours. Laboratory 4 hours. Total 9 hours per week.

EMS 112 Emergency Medical Technician–Basic I (4 CR) Prepares student for certification as a Virginia and/or National Registry EMT-Basic. Focuses on all aspects of pre-hospital basic life support as defined by the Virginia office of Emergency Medical Services curriculum for Emergency Medicine Technician Basic. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EMS 113 Emergency Medical Technician – Basic II (3 CR) Continues preparation of student for certification as a Virginia and/or National Registry EMT-Basic. Includes all aspects of pre-hospital basic life

support as defined by the Virginia office of Emergency Medical Services curriculum for Emergency Medicine Technician Basic. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EMS 120 Emergency Medical Technician–Basic Clinical I (1 CR) Observes in a program-approved clinical/field setting. Includes topics for both EMS 111 and EMS 113, dependent upon the program in which the student is participating and is a corequisite to both EMS 111 and EMS 113. Laboratory 2 hours per week.

EMS 132 Vehicle Rescue (1 CR) Educates Fire and EMS personnel in basic vehicle rescue. Teaches safe and proficient techniques for using air, manual and hydraulic tools. Lecture 1 hour per week.

EMS 133 Rope Rescue I (1 CR) Educates the student in rope use, repelling, self-rescue, basic rigging, and victim access. Emphasizes safe and effective rigging procedures. Lecture 1 hour per week.

EMS 151 Introduction to Advanced Life Support (4 CR) Corequisite: EMS 170. Prepares the student for Virginia Enhanced certification eligibility and begins the sequence for National Registry Intermediate and/or Paramedic certification. Includes the theory and application of the following: foundations, human systems, pharmacology, overview of shock, venous access, airway management, patient assessment, respiratory emergencies, allergic reaction, and assessment-based management. Conforms at a minimum to the Virginia Office of Emergency Medical Services curriculum. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EMS 153 Basic ECG Recognition (2 CR) Focuses on the interpretation of basic electrocardiograms (ECG) and their significance. Includes an overview of anatomy and physiology of the cardiovascular system including structure, function, and electrical conduction in the heart. Covers advanced concepts that build on the knowledge and skills of basic dysrhythmias determination and introduction to 12 lead ECG. Lecture 2 hours per week.

EMS 155 ALS – Medical Care (4 CR) Prerequisites: Current EMT-B certification, EMS 151, and EMS 153. Continues the Virginia Office of Emergency Medical Services Intermediate and/or Paramedic curricula. Includes ALS pharmacology, drug and fluid administration with emphasis on patient assessment, differential diagnosis and management of multiple medical complaints. Includes, but are not limited to

conditions relating to cardiac, diabetic, neurological, non-traumatic abdominal pain, environmental, behavioral, gynecology, and toxicological disease conditions. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EMS 157 ALS – Trauma Care (3 CR) Prerequisites: Current EMT-B certification and EMS 151. Continues the Virginia Office of Emergency Medical Services Intermediate and/or Paramedic curricula. Utilizes techniques which will allow the student to utilize the assessment findings to formulate a field impression and implement the treatment plan for the trauma patient. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EMS 159 ALS – Special Populations (3 CR) Prerequisites: EMS 151 and EMS 153. Pre- or corequisite: EMS 155. Continues the Virginia office of Emergency Medical Services Intermediate and/or Paramedic curricula. Focuses on the assessment and management of specialty patients including obstetrical, neonates, pediatric, and geriatrics. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EMS 170 ALS Internship (1 CR) Begins the first in a series of clinical experiences providing supervised direct patient contact in appropriate patient care facilities in and out of hospitals. Includes but not limited to patient care units such as the Emergency Department, critical care units, pediatric, labor and delivery, operating room, trauma centers, and various advanced life support units. Laboratory 3 hours per week.

EMS 172 ALS Clinical Internship II (1 CR) Corequisite: EMS 151. Continues with the second in a series of clinical experiences providing supervised direct patient contact in appropriate patient care facilities in and out of hospitals. Includes but not limited to patient care units such as the Emergency Department, critical care units, pediatric, labor and delivery, operating room and trauma centers. Laboratory 3 hours per week.

EMS 173 ALS Field Internship II (1 CR) Continues with the second in a series of field experiences providing supervised direct patient care in out-of-hospital advanced life support units. Laboratory 3 hours per week.

ENE – Energy Technology

ENE 100 - Conventional and Alternate Energy Applications (4 CR) Prerequisite: ELE

176 or divisional approval. Provides an overview of hydroelectric, coal, and nuclear energy production methods and renewable solar, geothermal, wind, and fuel cell technology. A complete system breakdown of conventional power production methods, efficiency, and sustainability when compared with solar, geothermal, wind, and fuel cell applications. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ENE 105 - Solar Thermal Active and Passive Technology (4 CR) Provides a comprehensive study of thermal technology as it applies to collector types and ratings, open-loop versus closed-loop and system sizing. Introduces hydronics, hot water, and pool heating applications. Provides an introduction to fluid dynamics and chemistry as it applies to system installation and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ENF - English Fundamentals (Effective Spring 2013)

ENF 01 Preparing for College English I (8 CR) Prerequisite: Qualifying Placement Score. Provides integrated reading and writing instruction for students who require extensive preparation to succeed in college-level English courses. Students will place into this course based on placement test scores. Upon successful completion and faculty recommendation, students will move into Preparing for College English III (if they require additional preparation) or into college-level English (if they require no additional preparation). Credit is not applicable toward graduation. Lecture 8 hours per week.

ENF 02 Preparing for College English II (4 CR) Prerequisite: Qualifying Placement Score. Provides integrated reading and writing instruction for students who require intermediate preparation to succeed in college-level English courses. Students will place into this course based on placement test scores. Upon successful completion and faculty recommendation, students will move into Preparing for College English III (if they require additional preparation) or into college-level English (if they require no additional preparation). Credit is not applicable toward graduation. Lecture 4 hours per week.

ENF 03 Preparing for College English III (2 CR) Prerequisite: Qualifying Placement Score. Provides integrated reading and writing instruction for students who require minimal preparation to succeed in college-level English courses but still need some preparation to succeed. Students will place into this

course based on placement test scores. Credit is not applicable toward graduation. Lecture 2 hours per week.

ENG – English

ENG 1 Preparing for College Writing I (4 CR)
Helps students discover and develop writing processes needed to bring their proficiency to the level necessary for entrance into their respective curricula. Guides students through the process of starting, composing, revising, and editing. Lecture 4 hours per week.

ENG 3 Preparing for College Writing II (3 CR)
Emphasizes strategies within the writing process to help students with specific writing situations. Develops techniques to improve clarity of writing and raise proficiency to the level necessary for entrance into particular curricula. Lecture 3 hours per week.

ENG 4 Preparing for College Reading I
(4 CR) Prepares students to be successful in college-level reading assignments with developmentally appropriate materials. Emphasizes strategies within the reading process to help students increase their understanding of reading materials. Includes word forms and meanings, comprehension techniques, and ways to control reading pace. Lecture 4 hours per week.

ENG 7 Writing and Reading Improvement I
(8 CR) Provides an integrated approach to developing students' writing and reading processes. Prepares students to complete assignments successfully by providing them with reading and writing strategies. Lecture 8 hours per week.

ENG 9 Individualized Instruction in Writing
(2 CR) Corequisite: ENG 111. Focuses on individual writing needs as determined by the student and instructor. Provides support for students simultaneously enrolled in other courses or who want additional writing instruction in a tutorial setting. Lecture 2 hours per week.

ENG 111 College Composition I (3 CR)
Prerequisites: A placement recommendation for ENG 111 or successful completion of all required developmental English courses (ENG 1, ENG 3, ENG 4, ENG 7). Introduces students to critical thinking and the fundamentals of academic writing. Through the writing process, students refine topics; develop and support ideas; investigate, evaluate, and incorporate appropriate resources; edit for effective style and usage; and determine appropriate approaches for a

variety of contexts, audiences, and purposes. Writing activities will include exposition and argumentation with at least one researched essay. Lecture 3 hours per week.

ENG 112 College Composition II (3 CR)
Prerequisite: Successful completion of ENG 111 or its equivalent and must be able to use word processing software. Continues to develop college writing with increased emphasis on critical essays, argumentation, and research, developing these competencies through the examination of a range of texts about the human experience. Requires students to locate, evaluate, integrate, and document sources and effectively edit for style and usage. Lecture 3 hours per week.

ENG 135 Applied Grammar (3 CR) Prerequisite: Divisional approval. Develops ability to edit and proofread correspondence and other documents typically produced in business and industry. Instructs the student in applying conventions of grammar, usage, punctuation, spelling, and mechanics. Lecture 3 hours per week.

ENG 150 Children's Literature (3 CR) Surveys the history of children's literature, considers learning theory and developmental factors influencing reading interests, and uses bibliographic tools in selecting books/materials for recreational interests and educational needs of children. Lecture 3 hours per week.

ENG 210 Advanced Composition (3 CR)
Prerequisite: ENG 112 or divisional approval. Helps students refine skills in writing non-fiction prose. Guides development of individual voice and style. Introduces procedures for publication. Lecture 3 hours per week.

ENG 211 Creative Writing I (3 CR) Prerequisite: ENG 112 or divisional approval. Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Lecture 3 hours per week.

ENG 215-216 Creative Writing – Fiction I-II
(3 CR, 3 CR) Introduces the fundamentals and techniques of writing short and long fiction. Lecture 3 hours per week.

ENG 217-218 Creative Writing– Poetry I-II (3 CR, 3 CR) Introduces the fundamentals and techniques of writing poetry. Lecture 3 hours per week.

ENG 241-242 Survey of American Literature I-II (3 CR, 3 CR) Prerequisite: ENG 112 or divisional

approval. Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 243-244 Survey of English Literature I-II (3 CR, 3 CR) Prerequisite: ENG 112 or divisional approval. Studies major English works from Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Lecture 3 hours per week.

ENG 251-252 Survey of World Literature I-II (3 CR, 3 CR) Prerequisite: ENG 112 or divisional approval. Examines major works of world literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 257 - Mythology (3 CR) Prerequisite: ENG 112 or divisional approval. Studies selected mythologies of the world, emphasizing their common origins and subsequent influence on human thought and expression. Involves critical reading and writing. Lecture 3 hours per week.

ENG 278 - Appalachian Literature (3 CR) Prerequisite: ENG 112 or divisional approval. Examines selected works of outstanding authors of the Appalachian region. Involves critical reading and writing. Lecture 3 hours per week.

ENV – Environmental Science

ENV 40 Basic Wastewater Licensure Review (1 CR) Review materials which are normally associated with the Wastewater Treatment Plant Operator's Class IV or Class III level certification examinations. Utilizes lecture, audiovisual, and workshop sessions to review required materials and to prepare the trainee to complete the wastewater operator examinations. Lecture 1 hour per week.

ENV 110 Introduction to Water and Wastewater Treatment Tech (3 CR) Provides entry-level students with a general overview of the entire water supply, treatment, and disposal system. Traces water supply from raw state through treatment, storage, distribution, use, waste collection, and discharge back to the environment. Covers aspects of water supply and wastewater treatment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ENV 115 Water Purification (3 CR) Prerequisite: ENV 110 and ENV 148 or divisional approval. Explores principles of water purification including secretion, sedimentation, rapid sand filtration,

chlorination, treatment, and prevention of disease. Studies fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to community health. Includes soil, water, wastewater, and industrial microbiology. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ENV 148 Math for Water and Wastewater Treatment Operations (3 CR) Introduces students to basic math calculations relating to water and wastewater concepts and operations. Prepares students for Waterworks and Wastewater Works Operators certification exam. Lecture 3 hours per week.

ENV 149 Wastewater Treatment Plant Operation (3 CR) Prerequisite: ENV 110 and ENV 148 or divisional approval. Teaches principles, practices and desired function and operation of a variety of wastewater treatment unit processes. Evaluates the operation of processes by determination of the information and testing required for evaluation and performing the subsequent necessary calculations. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ENV 161 Introduction to Environmental Compliance (3 CR) Examines the statutory history of significant environmental legislation and the promulgation of rules and regulations attendant to these laws. Emphasis will be placed on 40 CFR and appropriate Virginia environmental code. Students will understand proper field techniques in sampling protocols for soil, water, and air. Lecture 3 hours per week.

ENV 162 Environmental Principles in Public Health (3 CR) Examines critical factors involved in environmental/ public health administration in the current post-911 society. Topics covered will include basic risk analysis and fate and transport modeling environmental microbiology and toxicology with implications on genetics, GIS, and bioterrorism/ infectious diseases. Lecture 3 hours per week.

ETR – Electronics Technology

ETR 111 - Electronic Mathematics (3 CR) Studies electronic logic or computer technology. Includes a basic numbering system and Boolean algebra with applications to logic diagrams and circuits. May additionally cover mathematics by reviewing algebra and trigonometry fundamentals and applying those topics to practical electronics problems. Lecture 3 hours per week.

ETR 113 DC and AC Fundamentals I (4 CR)
Prerequisite: MTE 1, 2 and 3. Studies DC and AC circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 114 DC and AC Fundamentals II (4 CR)
Prerequisite: ETR 113. Corequisite: MTH 115. Studies DC and AC circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 123-124 Electronic Applications I-II (1 CR, 1 CR) Corequisite: ETR 141-142. Provides laboratory and shop experience as applied to basic electronic devices, circuits, and systems with emphasis on practical measurements. Laboratory 3 hours per week.

ETR 141-142 Electronics I-II (3 CR, 3 CR)
Prerequisite: ETR 113 or ELE 133. Introduces electronic devices as applied to basic electronic circuits and systems. Lecture 3 hours per week.

ETR 250 Solid State Circuits (4 CR) Prerequisite: Knowledge of DC/AC theory, and active devices and circuits, ETR 114 or equivalent. Teaches theory and application of amplifiers and oscillators. Includes amplifier circuit configurations, amplifier classes, operational amplifiers, power amplifiers, bandwidth distortion, and principles of feedback. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 261 Microprocessor Application I (3 CR) Prerequisite: ETR 280 or equivalent. Teaches the fundamentals of microprocessors including architecture, internal operations, memory, I/O devices machine level programming and interfacing. Emphasizes instrumentation and microprocessor. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ETR 280 Introduction to Digital Logic Circuits and Computers (4 CR) Prerequisite ETR 113. Studies digital logic, Boolean algebra, and arithmetic circuits, using standard integrated circuits and the functional block approach. Introduces concepts of computers, the internal operation and control language. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 285 Fundamentals of Microcomputer Repair (4 CR) Provides the student with an exposure to the various techniques and procedures used

to troubleshoot a microcomputer. May include an overview of a particular microprocessor system, use of isolation flow charts, test point charts, prints, diagnostic routines, component testing and fault isolation labs. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 286 Principles and Applications of Robotics (3 CR) Prerequisites: ELE 134 or ETR 113 and corequisite IND 250. Provides an overview of terminology, principles, practices, and applications of robotics. Studies development, programming; hydraulic, pneumatic, electronic controls; sensors, and system troubleshooting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

FIN - Financial Services

FIN 107 Personal Finance (3 CR) Presents a framework of personal money management concepts, including establishing values and goals, determining sources of income, managing income, preparing a budget, developing consumer buying ability, using credit, understanding savings and insurance, providing for adequate retirement, and estate planning. Lecture 3 hours per week.

FIN 215 Financial Management (3 CR)
Prerequisites: ACC 212, BUS 125. Pre/Corequisite: BUS 225. Introduces basic financial management topics including statement analysis, working capital, capital budgeting, and long-term financing. Focuses on Net Present Value and Internal Rate of Return techniques, lease vs. buy analysis, and Cost of Capital computations. Uses problems and cases to enhance skills in financial planning and decision making. Lecture 3 hours per week.

FRE – French

FRE 101-102 Beginning French I-II (4 CR, 4 CR) Prerequisite for FRE 102: FRE 101. Introduces understanding, speaking, reading, and writing skills and emphasizes basic French sentence structure. Lecture 4 hours per week.

FRE 201-202 Intermediate French I-II (3 CR, 3 CR) Prerequisites: For FRE 201, prerequisite is FRE 102; for FRE 202, prerequisite is FRE 201. Continues to develop understanding, speaking, reading, and writing skills. French is spoken in the classroom. Lecture 3 hours per week.

FST – Fire Science

FST 100 Principles of Emergency Services

(3 CR) Provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function to public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics. Lecture 3 hours per week.

FST 111 Hazardous Materials Response (3 CR)

Studies hazardous materials storage, standards, and applicable laws designed to protect the public and emergency personnel. Discusses specific methods and techniques used by the emergency worker in the abatement of hazardous materials incidents. Lecture 3 hours per week.

GEO – Geography

GEO 200 Introduction to Physical Geography

(3 CR) Studies major elements of the natural environment including earth-sun relationship, land forms, weather and climate, natural vegetation and soils. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 210 People and the Land: Introduction to Cultural Geography (3 CR)

Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 220 World Regional Geography (3 CR)

Studies physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions, and examines the geographical background of those problems. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GER - German

GER 101-102 Beginning German I-II (4 CR)

(4 CR) Introduces understanding, speaking, reading, and writing skills and emphasizes basic German sentence structures. Lecture 4 hours per week.

GER 201-202 Intermediate German I-II (4 CR)

(4 CR) Prerequisite: GER 102 or equivalent. For GER 202 Prerequisite: GER 201. Continues to develop understanding, speaking, reading, and writing skills. German is used in the classroom. Lecture 4 hours per week.

GIS – Geographic Information Systems

GIS 101 Introduction to Geospatial Technology I (3 CR)

Prerequisite: Basic computer knowledge including file management, mouse usage and keyboarding skills; MTE 1, 2 and 3 or divisional approval. Provides an introduction to the concepts of Geographic Information Systems (GIS), Global Positioning Systems, (GPS) and remote sensing components of Geospatial Technology. Teaches the introductory concepts of geographic location and problem solving by using GIS and GPS units in demonstrating solutions to cross-curricular applications of the technology. Lecture 3 hours per week.

GIS 102 Introduction to Geospatial Technology II (3 CR)

Prerequisite: GIS 101. Continues with the concepts of Geographic Information Systems (GIS), Global Positioning Systems (GPS) and remote sensing components of Geospatial Technology. Covers additional concepts of geographic location and problem solving by using GIS and GPS units in demonstrating solutions to cross-curricular applications of the technology. Lecture 3 hours per week.

GIS 200 Geographical Information

Systems I (3 CR) Prerequisite: EGR 216 or ITE 115 or equivalent and MTE 1, 2 and 3, or divisional approval. Provides hands-on introduction to a dynamic desktop GIS (Geographic Information System). Introduces the components of a desktop GIS and their functionality. Emphasizes manipulation of data for the purpose of analysis, presentation, and decision-making. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

GIS 201 Geographic Information Systems II

(3 CR) Prerequisite: GIS 200. Provides a continuation of GIS 200, with emphasis on advanced topics in problem-solving, decision-making, modeling, programming, and data management. Covers map projections and data formats, and methods for solving the problems they create. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

GIS 205 GIS 3-Dimensional Analysis (3 CR)

Prerequisite: GIS 201 or divisional approval. Introduces GIS 3D (three-dimensional) concepts and practices with a concentration on displaying, creating and analyzing spatial GIS data using 3D. Covers 3D shape files, 3D data formats such as Tin's, DEM's, grids and controlling the perspective and scale of 3D data through, rotating, panning and zooming. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

GIS 210 Understanding Geographic Data

(3 CR) Prerequisite: GIS 201 or divisional approval. Provides the student an introduction to geographic data and the principles behind their construction. Introduces the concepts for measuring locations and characteristics of entities in the real world. Exposes the student to the limitations and common characteristics of geographic data. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

GOL - Geology

GOL 105 Physical Geology (4 CR) Prerequisite: A placement recommendation for ENG 111 or successful completion of all required developmental English courses (ENG 1, ENG 3, ENG 4, ENG 7). Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 106 Historical Geology (4 CR) Prerequisites: GOL 105 recommended but not required and a placement recommendation for ENG 111 or successful completion of all required developmental English courses (ENG 1, ENG 3, ENG 4, ENG 7). Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil record. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 135 Field Studies in Geology (1-2 CR)

Investigates geologic phenomena. Includes activities such as observation of regional geology and landforms, collection of samples, and measurement and interpretation of geologic structures. Field studies 3-6 hours per week.

HIM – Health Information Management**HIM 130 Healthcare Information Systems**

(3 CR) Teaches basic concepts of microcomputer

software (to include operating systems, word processing, spreadsheets, and database applications). Focuses on microcomputer applications and information systems in the Healthcare environment. Provides a working introduction to electronic health information systems for allied health, teaching students how the adoption of electronic health records affects them as future healthcare professionals. Lecture 3 hours per week.

HIM 149 Introduction to Medical Practice Management (2 CR)

Introduces principles of administrative practice management. Examines patient scheduling, records management, financial systems and other office systems/ procedures. Focuses on the development of organizational and decision-making skills utilized by the practice manager. Lecture 2 hours per week.

HIM 150 - Health Records Management

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

HIM 190 Coordinated Internship I (2 CR)

Prerequisite: All curriculum requirements must be completed. Corequisite: HIM 254. Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Lecture 2 hours per week.

HIM 226 Legal Aspects of Health Record Documentation (2 CR)

Presents the legal requirements associated with health record documentation. Emphasizes the policies and procedures concerning the protection of the confidentiality of a patient's health records. Lecture 2 hours per week.

HIM 230 - Information Systems and Technology in Health Care (3 CR)

Explores computer technology and system application in health care. Introduces the information systems life cycle. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HIM 233 - Electronic Health Records Management (3 CR)

Prerequisites: HIM 130 and HIM 230. Studies new trends in management and

processing of health information with emphasis on the electronic health record (EHR). Covers the definition, benefits, standards, functionality, confidentiality and security, and impact of the EHR in the healthcare environment. Explores implementation of the EHR including infrastructure required, project management techniques, information technology systems, workflow processes and redesign in various health care settings. Discusses legal issues created by implementation of the EHR. Lecture 3 hours per week.

HIM 249 Supervision and Management Practices (3 CR) Prerequisite: MTE 1 and 2. Introduces supervision and management principles with emphasis on the application of these principles in the health information setting. Lecture 3 hours per week.

HIM 253 Health Records Coding (4 CR) Prerequisite: HLT 143. Pre/Corequisite: HLT 144. Examines the development of coding classification systems. Introduces ICD-9-CM coding classification system, its format and conventions. Stresses basic coding steps and guidelines according to body systems. Provides actual coding exercises in relation to each system covered. Lecture 4 hours per week.

HIM 254 Advanced Coding and Reimbursement (4 CR) Prerequisite: HIM 253, HLT 143, and HLT 144. Stresses advanced coding skills through practical exercises using actual medical records. Introduces CPT-4 coding system and guidelines for out-patient/ambulatory surgery coding. Introduces prospective payment system and its integration with ICD-9-CM coding. Lecture 4 hours per week.

HIM 290 Coordinated Internship II (1–5 CR) Prerequisite: All curriculum requirements must be completed. Divisional approval required. Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Variable hours.

HIS – History

HIS 101-102 History of Western Civilization I-II (3 CR, 3 CR) Examines the development of western civilization from ancient times to the present. The first semester ends with the seventeenth century; the second semester continues through modern times. Courses may be taken out of sequence. Lecture 3 hours per week.

HIS 111-112 World Civilization I-II (3 CR, 3 CR) Surveys Asian, African, Latin American, and European civilizations from the ancient period to the present.

HIS 111 covers ancient times to 1650. HIS 112 covers 1650 to present. HIS 111 and 112 may be taken out of sequence. Lecture 3 hours per week.

HIS 121-122 United States History I-II (3 CR, 3 CR) Surveys United States history from its beginning to the present. HIS 121 covers America from the 1500s to 1865 and HIS 122 continues the course to the 1990s.

Courses may be taken out of sequence. Lecture 3 hours per week.

HIS 141-142 African-American History I-II (3 CR) Surveys the history of black Americans from their African origins to the present. Lecture 3 hours per week.

HIS 205 Local History (3 CR) Studies the history of the local community and/or region. Lecture 3 hours per week.

HIS 241-242 History of Russia I-II (3 CR, 3CR) Surveys history of Russia from earliest times to the present. Includes political, economic, multi-national, social, and cultural aspects of Russian and Soviet history. Lecture 3 hours per week.

HIS 251 History of Middle East Civilization I (3 CR) Surveys intellectual, cultural, social, economic and religious patterns in the civilizations of the Middle East. Covers Semitic, Indo-European, and Tarkic-speaking peoples from pre- Islamic to the present. Lecture 3 hours per week.

HIS 253-254 - History of Asian Civilizations I-II (3 CR, 3CR) Surveys the civilizations of Asia from their origins to the present. Lecture 3 hours per week.

HIS 267 The Second World War (3 CR) Examines causes and consequences of the Second World War. Includes the rise of totalitarianism, American neutrality, military developments, the home fronts, diplomacy, and the decision to use the atomic bomb. Lecture 3 hours per week.

HIS 269 Civil War and Reconstruction (3 CR) Studies factors that led to the division between the States. Examines the war, the home fronts, and the era of Reconstruction. Lecture 3 hours per week.

HIS 279 Age of the American Revolution (3 CR) Examines the factors that led to the separation of the American Britain colonies from Great Britain. Covers the Revolutionary War, the problems faced by the revolutionary government, and postwar events that led to the adoption the United States Constitution. Lecture 3 hours per week.

HLT - Health

(Only the health courses below marked with an asterisk (*) are approved to meet the HLT/PED requirement.)

HLT 100* First Aid and Cardiopulmonary Resuscitation (3 CR) Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation. Lecture 3 hours per week.

HLT 105* Cardiopulmonary Resuscitation (1 CR) Equivalent to EMS 100. Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Lecture 1 hour per week.

HLT 106* First Aid and Safety (2 CR) Focuses on the principles and techniques of safety and first aid. Lecture 2 hours per week.

HLT 110* Concepts of Personal and Community Health (2–3 CR) Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Lecture 2–3 hours per week.

HLT 116* Introduction to Personal Wellness Concepts (2 CR) Introduces students to the dimensions of wellness including the physical, emotional, environmental, spiritual, occupational, and social components. Lecture 2 hours per week.

HLT 125 Anatomy and Physiology for Exercise Science (3 CR) Presents basic principles of human anatomy and physiology including the body structure, systems and functions. The course provides a foundation to build and apply concepts in the study of Exercise Science, Group Fitness, Personal Training and related fitness studies. Lecture 3 hours per week.

HLT 135* Child Health and Nutrition (3 CR) Focuses on the physical needs of the preschool child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as they relate to health, growth, and development. Lecture 3 hours per week.

HLT 138 Principles of Nutrition (2 CR) Studies nutrient components of food, including carbohydrates, fats, proteins, vitamins, minerals and water. Provides a behavioral approach to nutrient guidelines for the development and maintenance of optimum wellness. Lecture 2 hours per week.

HLT 141 Introduction to Medical Terminology (1 CR) Prerequisite: Acceptance into the AAS Nursing program. Focuses on medical terminology for students preparing for careers in the health professions. Lecture 1 hour per week.

HLT 143-144 Medical Terminology I-II (3 CR, 3 CR) Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Lecture 3 hours per week.

HLT 206 Exercise Science (3 CR) Prerequisite: MTE 1 and 2. Surveys scientific principles, methodologies, and research as applied to exercise and physical fitness. Emphasizes physiological responses and adaptations to exercise. Addresses basic elements of kinesiology, biomechanics, and motor learning. Presents an introduction to the physical fitness industry. Lecture 3 hours per week.

HLT 208 Fitness and Exercise Training (3 CR) Prerequisite: HLT 100; MTE 1 and 2. Introduces techniques for conducting physical fitness assessments and includes an introduction to electrocardiography. Emphasizes tests of cardiorespiratory fitness, muscular strength and endurance, joint flexibility, body composition, and pulmonary capacity. Emphasizes the safety guidelines and precautions used in testing. Covers equipment use and maintenance. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HLT 217 Exercise and Nutrition for Behavioral Change (3 CR) Studies the principles of behavioral change. Applies the stages of change as it relates to motivation in the fitness and nutrition industry. Lecture 3 hours per week.

HLT 230* Principles of Nutrition and Human Development (3 CR) Teaches the relationship between nutrition and human development. Emphasizes nutrients, balanced diet, weight control, and the nutritional needs of an individual. Lecture 3 hours per week.

HLT 240* Consumer Health Education (3 CR) Focuses on health fads, myths, misunderstandings, quackeries, deceptions, and fraudulent health practices. Includes selecting and purchasing health products, services, consumer protections, and in the planning and financing of medical care. Lecture 3 hours per week.

HLT 290 Coordinated Internship (3 CR)

Prerequisites: BIO 100, HLT 100, HLT 206, HIM 249, MTE 1 and 2. Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit.

HRI – Food Service Management**HRI 106 Principles of Culinary Arts I** (3 CR)

Introduces the fundamental principles of food preparation and basic culinary procedures. Stresses the use of proper culinary procedures combined with food service, proper sanitation, standards of quality for food items that are made, and proper use and care of kitchen equipment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRI 107 Principles of Culinary Arts II (3 CR)

Prerequisites: HRI 106, HRI 158 and HRI 219. Introduces the fundamental principles of food preparation and basic culinary procedures. Stresses the use of proper culinary procedures combined with food science, proper sanitation, standards of quality for food items that are made, and proper use and care of kitchen equipment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRI 119 Applied Nutrition for Food Service

(3 CR) Studies food composition, nutrition science, and application of nutrition principles by the food service professional. Provides the student with a basic understanding of human nutrition and application of nutrition in the service of commercially prepared meals. Lecture 3 hours per week.

HRI 128 Principles of Baking (3 CR) Prerequisite

or corequisite: HRI 158. Instructs the student in the preparation of breads, pastries, baked desserts, candies, frozen confections, and sugar work. Applies scientific principles and techniques of baking. Promotes the knowledge/skills required to prepare baked items, pastries and confections. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 140 Fundamentals of Quality for the Hospitality Industry (3 CR)

Teaches quality in the hospitality industry, including material on the total quality management movement. Emphasizes quality from the customer's perspective. Lecture 3 hours per week.

HRI 145 Garde Manger (3 CR) Prerequisite: HRI

106 and HRI 158. Studies garde manger, the art of decorative cold food preparation and presentation. Provides a detailed practical study of cold food

preparation and artistic combination and display of cold foods. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 154 Principles of Hospitality Management (3 CR)

Presents basic understanding of the hospitality industry by tracing the industry's growth and development, reviewing the organization and management of lodging, food, and beverage operations, and focusing on industry opportunities and future trends. Lecture 3 hours per week.

HRI 158 Sanitation and Safety (3 CR)

Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of foodborne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions. Lecture 3 hour per week.

HRI 206 International Cuisine (3 CR) Prerequisite:

HRI 106 and HRI 158. Introduces the concepts of cultural differences and similarities and the preparation of the food specialties of the major geographical areas of the world. Focuses on emerging cuisines as they become popular. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 207 American Regional Cuisine (3 CR)

Prerequisite: HRI 106 and HRI 158. Studies the distinct regional cooking styles of America and its neighbors. Emphasizes the indigenous ingredients as well as the cultural aspect of each region's cooking style. Includes the preparation of the various regional foods. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 215 Food Purchasing (3 CR)

Presents the method and procedures for purchasing food for hotels, restaurants and institutions. Deals with markets, federal and trade grades, governmental regulations, packaging, comparative versions price buying, yields and quality control. Lecture 3 hours per week.

HRI 218 Fruit, Vegetable, and Starch

Preparation (3 CR) Prerequisite: HRI 106 and HRI 158. Instructs the student in the preparation of fruits, vegetables, grains, cereals, legumes and farinaceous products. Promotes the knowledge/skills necessary to prepare menu items from fruits, vegetables, and their by-products, and to select appropriate uses as meal components. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 219 Stock, Soup, and Sauce Preparation

(3 CR) Prerequisite: HRI 106 and HRI 158. Instructs the

student in the preparation of stocks, soups, and sauces. Promotes the knowledge/skills to prepare stocks, soups, and sauces, and to select appropriate uses as meal components. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 220 Meat, Seafood, and Poultry Preparation (3 CR) Prerequisite: HRI 106 and HRI 158. Provides the study and preparation of meat, poultry, shellfish, fish, and game. Promotes the knowledge/skills required to select appropriate use of these foods as meal components. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 251 Food and Beverage Cost Control I (3 CR) Prerequisite: MTH 120 or divisional approval. Presents methods of pre-cost and pre-control as applied to the menu, purchasing, receiving, storing, issuing, production, sales and service which result in achievement of an operation's profit potential. Emphasizes both manual and computerized approaches. Lecture 3 hour per week.

HRI 280 Principles of Advanced Baking and Pastry (3 CR) Prerequisite: HRI 158 and HRI 128 or equivalent. Reviews foundation principles of classical and modern baking/pastry methods. Lecture 2 hours. Laboratory 3 Hours. Total 5 hours per week.

HRI 281 - Artisan Breads (3 CR) Prerequisite: HRI 280. Provides an integrated study of both classical and modern baking methods. Focuses on craft baking using simple ingredients to create superior products. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 282 - European Tortes and Cakes (3 CR) Prerequisite: HRI 280. Provides an integrated study of European tortes and cakes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 283 - Custards and Cremes (3 CR) Prerequisite: HRI 280. Provides an integrated study of classical and contemporary custards and cremes as menu items and recipe ingredients. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 284 Speciality, Spa and Plated Desserts (3 CR) Prerequisite: HRI 280. Provides integrated study of specialty, spa and plated desserts, which possess enhanced value through artistic presentation. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 285 - Chocolate and Sugar Arts (3 CR) Prerequisite: HRI 280. Focuses on an integrated study of chocolate and sugar as used by the pastry artist to

create candies, confections and showpieces. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 286 - Wedding and Specialty Cakes (3 CR) Prerequisites: HRI 280, HRI 282 and HRI 285. Provides an integrated study of classical and contemporary wedding and specialty cakes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 290 Coordinated Internship in Hospitality Management (2 CR) Corequisite: SDV 106. Supervises the on-the-job training in selected health agencies, business, industrial, or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

HRT - Horticulture

HRT 110 Principles of Horticulture (3 CR) Introduces concepts of plant growth and development. Covers horticultural practices, crops and environmental factors affecting plant growth. Lecture 3 hours per week.

HRT 115 Plant Propagation (3 CR) Teaches principles and practices of plant propagation methods. Examines commercial and home practices. Provides experience in techniques using seed-spores, cuttings, grafting, budding, layering, and division. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 117 Tools and Equipment (2 CR) Introduces tools and equipment used in commercial horticulture. Emphasizes power-operated equipment including spreaders, sprayers, saws and tractors. Stresses safety, maintenance, minor repair and appropriate tool selection. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 121 Greenhouse Crop Production I (3 CR) Covers commercial practices related to production of floriculture crops. Considers production requirements, environmental control and management, and cultural techniques. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 198 Seminar and Project (1 CR) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

HRT 201-202 Landscape Plants I-II (3 CR, 3 CR) Studies landscape use of plants. Considers ornamental value, growth habit, identification, and limitations.

Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 205 Soils (3 CR) Teaches theoretical and practical aspects of soils and other growing media. Examines media components, chemical and physical properties, and soil organisms. Discusses management and conservation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 207 Plant Pest Management (3 CR) Teaches principles of plant pest management. Covers morphology and life cycles of insects and other small animal pests and plant pathogens. Lab stresses diagnosis, chemical and non-chemical control of specific pests, and pesticide safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 227 Professional Landscape Management (3 CR) Focuses on basic practices and techniques involving landscape management. Includes development of a year-round management calendar and preparation of bid and contract proposals. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 231 Planting Design I (3 CR) Applies landscape theory and principles of drawing to the planning of residential and small-scale commercial landscape designs. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 232 Planting Design II (3 CR) Prerequisite: HRT 231. Applies landscape theory and principles of drawing to the planning of large-scale landscape designs. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 246 Herbaceous Plants (2 CR) Studies identification, culture and uses of herbaceous plants in landscaping. Includes perennials, biennials, common bulbs and annuals. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 260 Introduction to Floral Design (3 CR) Teaches skills required for the composition of basic table arrangements. Includes the history of design styles, identification of flowers and green, identification and use of equipment, and conditioning and handling of flowers. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 269 Professional Turf Care (3 CR) Covers turfgrass identification, selection, culture, propagation, and pest control. Surveys commercial turf care

operations and use of common equipment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 285 Management of a Horticultural Business (3 CR) Studies the business and selling practices, which relate to wholesale and retail horticultural businesses including garden centers, greenhouses, nurseries, and flower shops. Examines planning and layout, suppliers, merchandising, maintenance, and display of horticultural items. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 296 Training in Arboretum Internship (2 CR) Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Internship 4 hours per week.

HUM – Humanities

HUM 201 Survey of Western Culture I (3 CR) Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Lecture 3 hours per week.

HUM 202 Survey of Western Culture II (3 CR) Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Lecture 3 hours per week.

HUM 215 Native American Culture (3 CR) Surveys the cultural history of Native (Indian) peoples in the Americas from the pre-Columbian era until the present. Studies history, religion, literature, arts, life-ways and world views which comprise the diverse traditions of Native peoples. Lecture 3 hours per week.

HMS - Human Services

HMS 236 - Gerontology (3 CR) Examines the process of aging; its implications in relation to health, recreation, education, transportation, meaningful work or activity, and to community resources. Emphasizes experiencing the aging process, facilitating retirement, and application of the helping relationship to work with older adults. Lecture 3 hours per week.

HMS 251 - Substance Abuse I (3 CR) Provides knowledge, skills, and insight for working in drug and alcohol abuse programs. Emphasizes personal growth

and client growth measures in helping relationships. Stresses various methods of individual and group techniques for helping the substance abuser. Lecture 3 hours per week.

HMS 280 - Understanding Serious Mental Illness (3 CR) Provides an overview of current information about serious and persistent mental illnesses and their treatment. Includes a particular focus on relapse prevention and recovery. Lecture 3 hours per week.

IND – Industrial Engineering Technology

IND 75 Industrial Measurements and Conversions (1 CR) Covers a review of basic arithmetic principles with an intensive application of measurement and calibration devices, such as dial calipers, rulers, and various micrometers. Develops a proficiency for entrance into skilled trades or industrial practices. Lecture 1 hour per week.

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

IND 113 Materials and Processes in Manufacturing I (3 CR) Studies materials and processes for the manufacture of products. Investigates the nature of various materials. Examines the manufacturing processes of industry and their effects on materials. Lecture 3 hours per week.

IND 116 Applied Technology (3 CR) Introduces basic information and problem solving techniques in liquids, gases, solids, metrics, mechanics, forces, simple machines, heat, light, sound and nuclear energy as applied in industrial engineering technologies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 230 - Applied Quality Control (3 CR) Studies principles of inspection and quality assurance with emphasis on statistical process control. May include the setting up, maintaining, and interpreting of control charts, and review of basic metrology. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 250 Introduction to Basic Computer Integrated Manufacturing (3 CR) Presents basic principles used in the design and implementation in a computer integrated manufacturing system. Emphasizes team concept and all aspects of a computer integrated manufacturing system to include the following: Robotics, Conveyor Control, Machining Center Integration Quality Control, Statistical Quality Control, and Computer Integrated Manufacturing (CIM) software. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

IND 251 Automated Manufacturing Systems I (4 CR) Prerequisite: divisional approval. Presents basic principles used in the design and implementation in manufacturing work cells. Includes selection of the robot system, worksite, application cell sensors, development of cycle times, and economic analysis. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ITD – Information Technology Database and Web Design

ITD 110 Web Page Design I (3 CR) Stresses a working knowledge of web site designs, construction, and management using HTML or XHTML. Includes headings, lists, links, images, image maps, tables, forms, and frames. Lecture 3 hours per week.

ITD 112 Designing Web Page Graphics (3 CR) Prerequisite or Corequisite: ITD 110 or divisional approval. Explores the creation of digital graphics for web design. Includes basic design elements such as color and layout will be explored utilizing a computer graphics program(s). Lecture 3 hours per week.

ITD 120 - Design Concepts for Mobile Applications (3 CR) Prerequisite: ITP 140. Provides skills for designing both Web-based and stand-alone applications for wireless devices. Details discussions of the needs for applications including mobile phones and a range of rich hand-held devices such as PDA's. Emphasizes the importance of usability, accessibility, optimization and performance to create fast-loading business enterprise applications and games. Lecture 3 hours per week.

ITD 130 Database Fundamentals (3 CR) Introduces the student to Relational Database and Relational Database theory. Includes planning, defining and using a database; table design, linking and normalization; types of database, database description and definition. Lecture 3 hours per week.

ITD 210 Web Page Design II (3 CR) Prerequisite: ITD 110 or divisional approval. Incorporates advanced techniques in web site planning, design, usability, accessibility, advanced site management, and maintenance utilizing web editor software(s). Lecture 3 hours per week.

ITD 212 Interactive Web Design (3 CR) Prerequisite or Corequisite: ITD 110 or divisional approval. Provides techniques in interactive design concepts to create cross-platform, low-bandwidth animations utilizing a vector based application. Emphasizes the importance of usability, accessibility, optimization, and performance. Lecture 3 hours per week.

ITD 220 E-Commerce Administration (3 CR) Prerequisite: Divisional approval. Emphasizes techniques to plan and to design a platform-independent commerce Web site. Focuses on web business strategies, and the hardware and software tools necessary for Internet commerce, including comparison and selection of commerce architecture, installation and configuration, security considerations, and planning of a complete business-to-consumer and business-to-business site. Lecture 3 hours per week.

ITD 250 Database Architecture and Administration (4 CR) Prerequisite: ITD 130 or divisional approval. Involves in-depth instruction about the underlying architecture of databases and the handling of database administration. Lecture 4 hours per week.

ITD 256 Advanced Database Management (3 CR) Focuses in-depth instruction in the handling of critical tasks of planning and implementing large databases. Includes an introduction to concepts of advanced data warehousing and database configuration. Lecture 3 hours per week.

ITE – Information Technology Essentials

ITE 102 Computer and Information Systems (1 CR) Introduces terminology, concepts, and methods of using computers in information systems. This course teaches computer literacy; not intended for Information Technology majors. Lecture 1 hour per week.

ITE 115 Introduction to Computer Applications and Concepts (3 CR) Covers computer concepts and internet skills, and uses a software suite which includes word processing,

spreadsheet, database, and presentation software to demonstrate skills. Recommended prerequisite keyboarding skills. Lecture 3 hours per week.

ITE 140 Spreadsheet Software (3 CR) Covers the use of spreadsheet software to create spreadsheets with formatted cells and cell ranges, control pages, multiple sheets, charts, and macros. Topics include type and edit text in a cell, enter data on multiple worksheets, work with formulas and functions, create charts, pivot tables, and styles, insert headers and footers, and filter data. Covers MOS Excel objectives Lecture 3 hours per week.

ITN – Information Technology Networking

ITN 101 Introduction to Network Concepts (4 CR) Provides instruction in networking media, physical and logical topologies, common networking standards and popular networking protocols. Emphasizes the TCP/IP protocol suite and related IP addressing schemes, including CIDR. Includes selected topics in network implementation, support and LAN/WAN connectivity. Lecture 4 hours per week.

ITN 107 Personal Computer Hardware and Troubleshooting (4 CR) Includes specially designed instruction to give a student a basic knowledge of hardware and software configurations. Includes the installation of various peripheral devices as well as basic system hardware components. Lecture 4 hours per week.

ITN 109 Internet and Network Foundation (3 CR) Provides a basic comprehension of Internet and network technologies including IT job roles, connection methods, TCP/ IP functionality and DNS. Explores web server technologies with security and project management concepts. Introduces network creation, physical and logical topologies including media properties, server types, IP addressing and network security. Lecture 3 hours per week.

ITN 110 - Client Operating System (Windows 7) (3 CR) Prerequisite or corequisite: ITN 109. Introduces an overview of instruction in installation, configuration, administration, and troubleshooting of Client Operating System (Windows 7) in a networked data communications environment. Lecture 3 hours per week.

ITN 111 - Server Administration (Windows Server 2008) (3 CR) Prerequisite: ITN 109. Covers

basic instruction in various network protocols, name resolution services, remote access, security, and print installation, configuration, administration, monitoring, and troubleshooting of Server Administration software (Windows Server 2008) in an Active Directory domain environment. Lecture 3 hours per week.

ITN 112 Network Infrastructure (Windows Server 2008) (3 CR) Prerequisite: ITN 111. Provides extensive instruction for the technical knowledge required for installation, configuration, administration, monitoring, and troubleshooting of Network Infrastructure services (Windows Server 2008) such as NDS, DHCP, WINS, RRAS, NAT, and Certificate Authority to support the network infrastructure. Lecture 3 hours per week.

ITN 113 Active Directory (Windows Server 2008) (4 CR) Prerequisite: ITN 111. Emphasizes instruction in installation, configuration, and administration, monitoring, and troubleshooting of Active Directory (Windows Server 2008) components, DNS, Group Policy objects, RIS, and security. Lecture 4 hours per week.

ITN 115 Windows 2003 Server (3 CR) Consists of instruction that teaches students how to manage and maintain a Microsoft Windows Server 2003 environment. Lecture 3 hours per week.

ITN 240 Win.03 Active Directory & Network Infra. Design (AD-NID) (4 CR) Includes instruction that teaches students how to design a Microsoft Windows Server 2003 Active Directory and network infrastructure. Lecture 4 hours per week.

ITP – Information Technology Programming

ITP 100 Software Design (3 CR) Introduces principles and practices of software development. Includes instruction in critical thinking, problem solving skills, and essential programming logic in structured and object-oriented design using contemporary tools. Lecture 3 hours per week.

ITP 120 Java Programming I (4 CR) Prerequisite: ITP 100 or divisional approval. Entails instruction in fundamentals of object-oriented programming using Java. Emphasizes program construction, algorithm development, coding, debugging, and documentation of console and graphical user interface applications. Lecture 4 hours per week.

ITP 136 C# Programming I (4 CR) Prerequisite:

ITP 100 or divisional approval. Presents instruction in fundamentals of object-oriented programming and design using C#. Emphasizes program construction, algorithm development, coding, debugging, and documentation of applications within the .NET framework. Lecture 4 hours per week.

ITP 136L C# Programming I Laboratory (1 CR) Prerequisite: ITP 136. Provides problem solving experience to supplement instruction in C# Programming I for students completing the GIS Developer Concentration in the Information Systems Technology degree program. Laboratory 2 hours per week.

ITP 140 Client Side Scripting (3 CR) Prerequisite: ITD 110 and ITP 100 or divisional approval. Provides instruction in fundamentals of Internet application design, development, and deployment using client side scripting language(s). Lecture 3 hours per week.

ITP 160 Introduction to Game Design & Development (3 CR) Introduces object-oriented game design and development. Provides overview of the electronic game design and development process and underlines the historical context, content creation strategies, game careers, and future trends in the industry. Utilizes a game language environment to introduce game design, object-oriented paradigms, software design, software development and product testing. Teaches skills of writing a game design document and creating a game with several levels and objects. Integrate 2D animations, 3D models, sound effects, and background music as well as graphic backgrounds. Lecture 3 hours per week.

ITP 170 Project Management (3 CR) Prerequisite: Divisional approval. Introduces the concepts of project management as defined by the Project Management Institute, the accreditation body for project management. Lecture 3 hours per week.

ITP 220 Java Programming II (4 CR) Prerequisite: ITP 120. Prerequisite or Corequisite: ITD 130. Imparts instruction in application of advanced object-oriented techniques to application development using Java. Emphasizes database connectivity, inner classes, collection classes, networking, and threads. Lecture 4 hours per week.

ITP 225 Web Scripting Languages (3 CR) Prerequisite: ITD 110, ITP 100 and ITP 140 or divisional approval. Introduces students to the principles, systems, and tools used to implement Web

applications. Provides students with a comprehensive introduction to the programming tools and skills required to build and maintain interactive Web sites. Students will develop Web applications utilizing client-side and server-side scripting languages along with auxiliary tools needed for complete applications. Lecture 3 hours per week.

ITP 236 C# Programming II (4 CR) Prerequisite: ITP 136. Prerequisite or Corequisite: ITD 130. Focuses instruction in advanced object-oriented techniques using C# for application development. Emphasizes database connectivity and networking using the .NET framework. Lecture 4 hours per week.

ITP 244 ASP.NET – Server-Side Programming (3 CR) Prerequisite: ITD 130 and ITP 136. Entails instruction in creation of ASP.NET Web applications to deliver dynamic content to a Web site utilizing server controls, web forms, and web services to accomplish complex data access tasks. Lecture 3 hours per week.

ITP 246 Java Server-Side Programming (3 CR) Prerequisite: ITP 220 or divisional approval. Provides instruction in application and integration of web-based clients and server-side Java to three-tier business applications. Includes use of tools UML, XML, Java servlets, JSPs and JDBC database access. Lecture 3 hours per week.

LAT - Latin

LAT 101-102 Elementary Latin I-II (3 CR) (3 CR) Teaches Latin grammar and composition. Introduces the translation of Latin literature, with special selections from Caesar and other writers. Lecture 3 hours per week.

LAT 201-202 Intermediate Latin I-II (3 CR) (3 CR) Prerequisites: two years high school Latin or one year college Latin. Introduces the reading of classical Latin with a review of Latin grammar, forms, and syntax. Lecture 3 hours per week.

LGL – Legal Administration

LGL 110 Introduction to Law and the Legal Assistant (3 CR) Introduces various areas of law in which a legal assistant may be employed. Includes study of court system (Virginia and federal) as well as a brief overview of criminal law, torts, domestic relations, evidence, ethics, the role of the legal assistant and other areas of interest. Lecture 3 hours per week.

LGL 115 Real Estate Law for Legal Assistants (3 CR) Studies law of real property and gives in-depth survey of more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting these various instruments and studies the system of recording and search of public documents. Lecture 3 hours per week.

LGL 117 Family Law (3 CR) Studies elements of a valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, adoptions, and applicable tax consequences. Includes property settlement, pre- and ante-nuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Lecture 3 hours per week.

LGL 125 Legal Research (3 CR) Corequisite: LGL 126. Provides an understanding of various components of the law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, Shepard's Citations, ALR, and other research tools. May include overview of computer applications and writing projects. Lecture 3 hours per week.

LGL 126 Legal Writing (3 CR) Prerequisite: ENG 111 or divisional approval. Corequisite: LGL 125. Studies proper preparation of various legal documents, including legal memoranda, letters, and pleadings. Involves practical applications. May include case and appellate briefs. Lecture 3 hours per week.

LGL 200 - Ethics for the Legal Assistant (1 CR) Examines general principles of ethical conduct applicable to legal assistants. Includes the application of rules of ethics to the practicing legal assistant. Lecture 1 hour per week.

LGL 210 Virginia and Federal Procedure (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Examines the rules of procedure in the Virginia and federal court systems, including the Federal Rules of Civil Procedure and the Rules of Practice and Procedure in the District Courts, Circuit Courts, Virginia Court of Appeals, and the Supreme Court of Virginia. Lecture 3 hours per week.

LGL 215 Torts (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Studies fundamental principles of the law of torts. May include preparation and use of pleadings and other documents involved in the trial of a civil action. Emphasizes personal injury, products liability, and malpractice cases. Lecture 3 hours per week.

LGL 216 Trial Preparation and Discovery

Practice (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Examines the trial process, including the preparation of a trial notebook, pretrial motions, and orders. May include the preparation of interrogatories, depositions, and other discovery tools used in assembling evidence in preparation for trial or an administrative hearing. Lecture 3 hours per week.

LGL 218 Criminal Law (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Focuses on major crimes, including their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia Law. May include general principles of applicable constitutional law and criminal procedures. Lecture 3 hours per week.

LGL 225 Estate Planning and Probate (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Introduces various devices used to plan an estate, including wills, trusts, joint ownership and insurance. Considers various plans in light of family situations and estate objectives. Focuses on practices involving administration of an estate, including taxes and preparation of forms. Lecture 3 hours per week.

LGL 230 Legal Transactions (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Presents an in-depth study of general contract law, including formation, breach, enforcement, and remedies. May include an overview of the Uniform Commercial Code sales, commercial paper, and collections. Lecture 3 hours per week.

LGL 235 Legal Aspects of Business Organizations (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Studies the fundamental principles of agency law and the formation of business organizations. Includes sole proprietorship, partnerships, corporations, limited liability companies, and other business entities. Reviews preparation of the documents necessary for the organization and operation of businesses. Lecture 3 hours per week.

LGL 238 Bankruptcy (3 CR) Prerequisite: Successful completion of all 100 level LGL courses or divisional approval. Provides a practical understanding of non-bankruptcy alternatives and the laws of bankruptcy including Chapters 7, 11, 12 and 13 of the Bankruptcy Code. Emphasis will be placed on preparing petitions, schedules, statements and other forms. Lecture 3 hours per week.

MAC - Machine Technology

MAC 131 Machine Lab I (3CR) Teaches fundamental machine shop operations, bench work, layout, measuring tools, and safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MAC 161 Machine Shop Practices I (3CR) Introduces safety procedures, bench work, hand tools, precision measuring instruments, drill presses, cut-off saws, engine lathes, manual surface grinders, and milling machines. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC - Mechanical Engineering Technology

MEC 113 Materials and Processes of Industry (3 CR) Studies engineering materials and accompanying industrial manufacturing processes. Investigates nature of materials structure and properties from a design standpoint. Analyzes the effects of the various processes on materials and the process themselves. Includes machining, casting, forming, molding, hot/cold working, chipless machining, and welding. Addresses quality assurance and inspection procedures. Lecture 3 hours per week.

MEC 119 Introduction to Basic CNC and CAM (3 CR) Prerequisite: MTE 1, 2 and 3 or divisional approval. Teaches the basic concepts of Computer Numerical Control (CNC) programming of Numerical Control Machinery with emphasis on Computer Aided Manufacturing (CAM)/ Computer Aided Drafting (CAD). Program writing procedures will be based on using the following: basic G-code programming language for CNC machinery, CAD/CAM programming systems to produce correct code for CNC Machinery, basic computer usage, CAD/CAM integration, and Code-to-machine transfer via Distributive Numeric Control (DNC). Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 131 Mechanics I – Statics for Engineering Technology (3 CR) Prerequisite: MTH 115 or equivalent. Corequisite: MTH 116 or equivalent. Teaches Newton's laws, resultants and equilibrium of force systems, trusses and frames, determination of centroids, and distributed loads and moments of inertia. Introduces dry friction and force systems in space. Lecture 3 hours per week.

MEC 132 Mechanics II – Strength of Materials for Engineering Technology (3 CR) Prerequisite: MEC 131. Teaches the concepts of stress and strain.

Provides an analysis of stresses and deformations in loaded members, connectors, shafts, beams, columns, and combined stress. Lecture 3 hours per week.

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

MEC 162 Fluid Mechanics – Applied Hydraulics/ Pneumatics (3 CR) Introduces hydraulic and pneumatic systems found in construction equipment, road vehicles, and farm equipment. Includes the basic theory, construction, maintenance, and repair of hydraulic and pneumatic power systems. Lecture 3 hours per week.

MEC 205 - Piping and Auxiliary Systems (3 CR) Studies threaded pipe, welded pipe, isometric pipe sketching and layout, gaskets, packing, industrial hoses and tubing, basic steam system operations, automatic and manual valves, and positive displacement pumps. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEN – Mental Health

MEN 100 Introduction to Mental Health (3 CR) Surveys history of mental health from ancient to contemporary times, with special emphasis on impact of the psychoanalytic, humanistic, and behavioral movements in the treatment of mental illness. Includes examination of structure and functions of human service delivery systems, knowledge and skills of mental health workers, and current ethical and legal issues. Lecture 3 hours per week.

MEN 101-102 Mental Health Skills Training I-II (3 CR, 3 CR) Prerequisite for MEN 102: MEN 101. Develops skills necessary to function as a mental health worker, with emphasis on guided practice in counseling skills as well as improved self-awareness. Includes training in problem solving, goal-setting, and implementation of appropriate strategies and evaluation techniques relating to interaction involving a variety of client needs. Lecture 3 hours per week.

MEN 221-222 Group Process I-II (3 CR, 3 CR) Prerequisite for MEN 221: MEN 101-102. Prerequisite for MEN 222: MEN 221 or divisional approval needed. Studies the stages of group development, role of the

group leader, and contemporary models of group counseling utilized in mental health counseling. Includes experiential training in group leadership. Lecture 3 hours per week.

MEN 225 Counseling Therapy (3 CR) Studies various models of counseling theories and appropriate application of counseling techniques in the helping profession. Lecture 3 hours per week.

MEN 290 Coordinated Practice in Mental Health (5 CR) Prerequisites: MEN 101-102 and divisional approval. Provides supervised experience in a community mental health/ human services agency. Students will spend 2 hours per week in a seminar class and a total of 180 hours at the placement site. Arrangements for placement are made the semester prior to the one in which the student actually takes the class. Contact the Internship Coordinator in March to make plans for a fall or summer semester placement or in October to plan for a spring semester placement.

MKT - Marketing

MKT 100 Principles of Marketing (3 CR) Presents principles, methods, and problems involved in the marketing of goods, services and ideas to consumers and organizational buyers. Discusses present-day problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of the marketing mix and market research, plus legal, social, ethical, e-commerce and international considerations in marketing. Lecture 3 hours per week.

MKT 110 Principles of Selling (3 CR) Presents a fundamental, skills-based approach to selling and relationship building. Emphasizes learning effective interpersonal communication skills in all areas of the sales process through skill-building activities. Examines entry-level sales careers in retailing, wholesaling, services and industrial selling. Lecture 3 hours per week.

MKT 220 Principles of Advertising (3 CR) Emphasizes the role of advertising in the marketing of goods, services and ideas. Discusses the different uses of advertising; types of media; how advertising is created; agency functions; and legal, social, and economic aspects of the industry. Introduces advertising display, copy and art work preparation, printing and selection of media. Lecture 3 hours per week.

MKT 275 International Marketing (3 CR) Examines the role of global business as well as

the environments in which they operate. Covers marketing strategies as they apply to global markets and contrasts them with domestic strategies. Lecture 3 hours per week.

MKT 276 International Marketing Management (3 CR) Presents the process of marketing and management and applies it to the marketing of products within the global marketplace. Introduces the student to activities involving the gathering and analyzing of information in the development and implementation of an international marketing plan. Lecture 3 hours per week.

MTH - Mathematics

MTH 115-116 Technical Mathematics I-II (3 CR, 3 CR) Prerequisites: MTE 1, 2, 3, 4, 5 and 6 or a placement recommendation for MTH 115 or MTH 116. Presents Algebra through exponential and logarithmic functions, Trigonometry, vectors, analytic Geometry, and complex numbers. Lecture 3 hours per week.

MTH 120 Introduction to Mathematics (3 CR) Prerequisites: MTE 1, 2, and 3 or a placement recommendation for MTH 120. Introduces number systems, logic, basic Algebra, and descriptive statistics. Intended for occupational/technical programs. Lecture 3 hours per week.

MTH 151 Mathematics for the Liberal Arts I (3 CR) Prerequisites: MTE 1, 2, 3, 4, and 5 or a placement recommendation for MTH 151. Presents topics in sets, logic, numeration systems, geometric systems, and elementary computer concepts. Lecture 3 hours per week.

MTH 152 Mathematics for the Liberal Arts II (3 CR) Prerequisites: MTE 1, 2, 3, 4, and 5 or a placement recommendation for MTH 152. Presents topics in functions, combinatorics, probability, statistics and Algebraic systems. Lecture 3 hours per week.

MTH 157 Elementary Statistics (3 CR) Prerequisites: MTE 1, 2, 3, 4 and 5 or a placement recommendation for MTH 157. Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis. Credit will not be awarded for both MTH 157 and MTH 241. Lecture 3 hours per week.

MTH 163 Pre-Calculus I (3 CR) Prerequisites: MTE 1, 2, 3, 4, 5, 6, 7, 8 and 9 or a placement recommendation for MTH 163. Presents college Algebra, matrices, and Algebraic, exponential, and logarithmic functions.

Credit will not be awarded for both MTH 163 and 166. Lecture 3 hours per week.

MTH 166 Pre-Calculus with Trigonometry (5 CR) Prerequisites: MTE 1, 2, 3, 4, 5, 6, 7, 8 and 9 or a placement recommendation for MTH 166. Presents

college Algebra, analytic Geometry, Trigonometry, and Algebraic, exponential, and logarithmic functions. Credit will not be awarded for both MTH 163 and MTH 166. Lecture 5 hours per week.

MTH 175 Calculus of One Variable I (3 CR) Prerequisites: MTH 166 or a placement recommendation for MTH 175. Presents differential calculus of one variable including the theory of limits, derivatives, differentials, antiderivatives and applications to Algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Lecture 3 hours per week.

MTH 176 Calculus of One Variable II (3 CR) Prerequisites: MTH 175 or equivalent. Continues the study of integral calculus of one variable including indefinite integral, definite integral and methods of integration with applications to Algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Lecture 3 hours per week.

MTH 177 Introductory Linear Algebra (2 CR) Corequisite: MTH 175 or equivalent. Covers matrices, vector spaces, determinants, solutions of systems of linear equations, and eigen values. Designed for mathematical, physical, and engineering science programs. Lecture 2 hours per week.

MTH 178 Topics in Analytic Geometry (2 CR) Prerequisite: MTH 175. Corequisite: MTH 176 or equivalent. Covers conic sections, polar and parametric equations, polar and parametric graphing, and calculus with vector-valued functions. Designed for mathematical, physical, and engineering science programs. Lecture 2 hours per week.

MTH 241 Statistics I (3 CR) Prerequisites: MTH 163 or MTH 166 or a placement recommendation for MTH 241. Covers descriptive statistics, elementary probability, probability distributions, estimation, and hypothesis testing. Uses a computer package to solve case studies. Lecture 3 hours per week.

MTH 242 Statistics II (3 CR) Prerequisites: MTH 241 or equivalent. Continues the study of estimation and hypothesis testing with emphasis on correlation and regression, analysis of variance, chi-square

test, and non-parametric methods. Presents linear programming, network theory, project scheduling, and other quantitative applications. Uses a computer package to solve case studies. Lecture 3 hours per week.

MTH 271 Applied Calculus I (3 CR) Prerequisite: MTH 163 or MTH 166 or a placement recommendation for MTH 271. Presents limits, continuity, differentiation of Algebraic and transcendental functions with applications, and an introduction to integration. Lecture 3 hours per week.

MTH 272 Applied Calculus II (3 CR) Prerequisites: MTH 271 or equivalent. Covers techniques of integration, multivariable calculus, and an introduction to differential equations. Lecture 3 hours per week.

MTH 277 Vector Calculus (4 CR) Prerequisite: MTH 176, MTH 177, MTH 178 or equivalent. Presents vector valued functions, partial derivatives, multiple integrals, infinite series, and topics from the calculus of vectors. Designed for mathematical, physical, and engineering science programs. Lecture 4 hours per week.

MTH 285 Linear Algebra (3 CR) Prerequisite: MTH 176 or equivalent. Covers matrices, vector spaces, determinants, solutions of systems of linear equations, basis and dimension, eigen values, and eigen vectors. Designed for mathematical, physical and engineering science programs. Lecture 3 hours per week.

MTH 287 Mathematical Structures (3 CR) Corequisite: MTH 176 or equivalent. Presents topics in mathematical structures of value to students majoring in Computer Science or other disciplines requiring programming skills. Covers logic, set theory, number theory, combinatorics, functions, relations, and graph theory. Lecture 3 hours per week.

MTH 291 Differential Equation (3 CR) Corequisite: MTH 277 or equivalent. Introduces first order differential equations, linear differential equations, numerical methods, and applications. Designed for mathematical, physical, and engineering science programs. Lecture 3 hour per week.

MTE - Math Essentials

MTE 1 Operations with Positive Fractions (1 CR) Prerequisite(s): BSK 1 or a qualifying placement score. Includes operations and problem solving with proper fractions, improper fractions, and mixed numbers without the use of a calculator. Emphasizes applications and includes U. S. customary units of measure. Credit is not applicable toward graduation.

Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 2 Operations with Positive Decimals and Percents (1 CR) Prerequisite(s): MTE 1 or qualifying placement score. Includes operations and problem solving with positive decimals and percents. Emphasizes applications and includes U. S. customary and metric units of measure. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 3 Algebra Basics (1 CR) Prerequisite(s): MTE 2 or qualifying placement score. Includes basic operations with algebraic expressions and solving simple algebraic equations using signed numbers with emphasis on applications. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 4 First Degree Equations and Inequalities in One Variable (1 CR) Prerequisite(s): MTE 3 or qualifying placement score. Includes solving first degree equations and inequalities containing one variable, and using them to solve application problems. Emphasizes applications and problem solving. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 5 Linear Equations, Inequalities and Systems of Linear Equations in Two Variables (1 CR) Prerequisite(s): MTE 4 or qualifying placement score. Includes finding the equation of a line, graphing linear equations and inequalities in two variables and solving systems of two linear equations. Emphasizes writing and graphing equations using the slope of the line and points on the line, and applications. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 6 Exponents, Factoring and Polynomial Equations (1 CR) Prerequisite(s): MTE 5 or qualifying placement score. The student will learn to perform operations on exponential expressions and polynomials. Students will also learn techniques to factor polynomials and use these techniques to solve polynomial equations. Emphasis should be on learning all the different factoring methods, and solving application problems using polynomial equations. Credit is not applicable toward graduation. Credit

for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 7 Rational Expressions and Equations

(1 CR) Prerequisite(s): MTE 6 or qualifying placement score. Includes simplifying rational algebraic expressions, solving rational algebraic equations and solving applications that use rational algebraic equations. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 8 Rational Exponents and Radicals (1 CR)

Prerequisite(s): MTE 7 or qualifying placement score. Includes simplifying radical expressions, using rational exponents, solving radical equations and solving applications using radical equations. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTE 9 Functions, Quadratic Equations and Parabolas (1 CR)

Prerequisite(s): MTE 8 or qualifying placement score. Includes an introduction to functions in ordered pair, graph, and equation form. Also introduces quadratic functions, their properties and their graphs. Credit is not applicable toward graduation. Credit for this course can be received by completing the appropriate MTT course. Lecture 1 hour per week.

MTS - Motorsports Management & Technology

MTS 130 Motorsports Structural Technology I

(3 CR) Prerequisite(s): MTS 125 and WEL 130. Introduces the student to the basic design and fabrication of a racecar. Develops skills for use of the tools, equipment, and materials in the production of a racecar. Emphasizes safety, accuracy, and aesthetics of the racecar and the work environment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MTT - Developmental Mathematics

MTT 1 Developmental Mathematics I

(MTE 1, 2, 3, 4, 5), (1 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of one developmental math unit prescribed by the student's placement test results. Intended for students beginning their developmental mathematics

requirements in MTE 1, 2, 3, 4 or 5. Credits not applicable towards graduation.

MTT 1 Developmental Mathematics I

(MTE 6, 7, 8, 9) (1 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of one developmental math unit prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 6, 7, 8, or 9. Credits not applicable towards graduation.

MTT 2 Developmental Mathematics II

(MTE 1, 2, 3, 4, 5) (2 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of two developmental math units prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 1, 2, 3, 4 or 5. Credits not applicable towards graduation.

MTT 2 Developmental Mathematics II

(MTE 6, 7, 8, 9) (2 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of two developmental math units prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 6, 7, 8, or 9. Credits not applicable towards graduation.

MTT 3 Developmental Mathematics III

(MTE 1, 2, 3, 4, 5) (3 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses or curricula. Designed for the study of three developmental math units prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 1, 2, 3, 4, or 5. Credits not applicable towards graduation.

MTT 3 Developmental Mathematics III

(MTE 6, 7, 8, 9) (3 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses or curricula. Designed for the study of three developmental math units prescribed by the student's placement test results. Intended for students beginning their

developmental mathematics requirements in MTE 6, 7, 8, or 9. Credits not applicable towards graduation.

MTT 4 Developmental Mathematics IV

(MTE 1, 2, 3, 4, 5) (4 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses or curricula. Designed for the study of four developmental math units prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 1, 2, 3, 4, or 5. Credits not applicable towards graduation.

MTT 4 Developmental Mathematics IV

(MTE 6, 7, 8, 9) (4 CR) Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses or curricula. Designed for the study of four developmental math units prescribed by the student's placement test results. Intended for students beginning their developmental mathematics requirements in MTE 6, 7, 8, or 9. Credits not applicable towards graduation.

MUS – Music

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

MUS 130 Overview of the Recording Industry

(1 CR) Prerequisite: divisional approval. Introduces and surveys employment opportunities in the commercial music industry. Assists students in defining their professional goals. Lecture 1 hour per week.

MUS 140 Introduction to Recording

Techniques (3 CR) Introduces students to the theory of and practices in digital audio. Describes basic background of the history of audio, culminating with hands-on operation of a digital audio workstation (DAW). The student is not expected to have any previous musical experience. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 163-164 Guitar Theory and Practice

I-II (3 CR, 3 CR) Prerequisite for MUS 164: MUS 163 or divisional approval. Studies the fundamentals of sound production, music theory, and harmony as they apply

to guitar. Builds proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Presents different types of guitars and related instruments. Emphasizes music as entertainment and as a communication skill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MUS 225 - The History of Jazz (3 CR) Studies the underlying elements of jazz, concentrating on its cultural and historical development from earliest stages to the present. No previous knowledge of music is required. Lecture 3 hours per week.

NAS – Natural Science

NAS 131-132 - Astronomy I-II (4 CR) Prerequisite:

A placement recommendation for ENG 111 or successful completion of all required developmental English courses (ENG 1, ENG 3, ENG 4, ENG 7). Studies the major and minor bodies of the solar system, stars and nebulae of the milky way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 185 Microbiology (4 CR) Prerequisite: recent high school biology or BIO 101. Surveys microorganisms, presenting their characteristics and activities as related to health and disease. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NUR – Nursing

NUR 115 LPN Transition (7 CR) Prerequisite:

NUR 290. Introduces the role of the registered nurse through concepts and skill development in the discipline of professional nursing. This course serves as a bridge course for licensed practical nurses and is based upon individualized articulation agreements, mobility exams, or other assessment criteria as they related to local programs and service areas. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Lecture 6 hours. Laboratory 3 hours. Total 9 hours per week.

NUR 121 Nursing Fundamentals I (10 CR)

Prerequisites: Acceptance into the AAS Nursing program; BIO 141 and BIO 142. Introduces the nursing process as a framework to meet the biopsychosocial needs of individuals/families throughout the lifespan. Focuses on assessment, introducing basic concepts

and needs, pharmacologic treatment and developing basic nursing skills. Includes math computational skills, basic computer instruction related to the delivery of nursing care, introduction to nursing, legal aspects of nursing care, diagnostic testing, assessment, asepsis, body mechanics and safety, personal care, mobility, wound care, elimination, fluid and electrolytes, regulation, pain control, care of the obstetrical client, labor/ delivery and care of the newborn and medication administration and dosage calculations. Provides supervised learning. Lecture 7 hours. Laboratory 9 hours. Total 16 hours per week.

NUR 122 Nursing Fundamentals II (10 CR)

Prerequisite: NUR 121 and NUR 135. Pre/Corequisite: NAS 185. Utilizes the nursing process to meet the biopsychosocial needs of individuals/families experiencing prevalent variations in health throughout the lifespan. Focuses on introducing basic concepts and needs and continued development of nursing skills. Includes math computational skills, basic computer instruction related to the delivery of nursing care; oxygenation, neurological, endocrine, safety, sensory, rest, sleep, activity, self-esteem, respiratory, cardiovascular, gastrointestinal and musculoskeletal needs; and the care of clients with dementia. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Lecture 6 hours. Laboratory 12 hours. Total 18 hours per week.

NUR 135 Drug Dosage Calculations (2 CR)

Prerequisite: Acceptance into the AAS Nursing program. Focuses on apothecary, metric, household conversion in medication dosage calculation for adult and pediatric clients. Provides a practical approach to learning to calculate and prepare medications and solutions. Includes calculating intravenous flow rates. Lecture 2 hours per week.

NUR 238 Integrated Nursing Principles I

(10 CR) Prerequisites: NUR 115 or NUR 122 and NAS 185. Focuses on acute nursing care of individuals, families, and/or groups with multidimensional needs in a variety of settings. Uses all components of the nursing process with increasing degrees of skill. Content includes: parental dosage computational skills, computer instruction related to delivery of nursing care; professional issues; complex nursing care related to alteration in oxygenation, nutrition, elimination, regulation and love and belonging (children and the child bearing family). Provides supervised learning experiences in College nursing laboratories and/or cooperating agencies. Lecture 6 hours. Laboratory 12 hours. Total 18 hours per week.

NUR 239 Integrated Nursing Principles II

(10 CR) Prerequisite: NUR 238. Focuses on chronic nursing care of individuals, families, and/or groups with multidimensional needs in a variety of settings. Uses all components of the nursing process with increasing degrees of skill. Content includes: professional managerial issues; complex nursing care related to oxygenation, nutrition, elimination, regulations, rest, sleep, activity and love and belonging (self-esteem, psychiatric disorders). Provides supervised learning experiences in College nursing laboratories and/or cooperating agencies. Lecture 6 hours. Laboratory 12 hours. Total 18 hours per week.

NUR 290 Coordinated Practice (1 CR)

Prerequisite: Acceptance into the AAS Nursing program. Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Clinical 3 hours per week.

PED – Physical Education and Recreation

PED 100 Pilates (1 CR) Provides a method of mind-body exercise and physical movement designed to stretch, strengthen, balance the body, and improve posture and core stabilization while increasing body awareness. Laboratory 2 hours per week.

PED 101-102 Fundamentals of Physical Activity I-II (1 CR, 1 CR)

Presents principles underlying the components of physical fitness. Utilizes conditioning activities involving cardiovascular strength and endurance, respiratory efficiency, muscular strength, and flexibility. May include fitness assessment, nutrition and weight control information, and concepts of wellness. Laboratory 2 hours per week.

PED 103-104 Aerobic Fitness I-II (1 CR, 1 CR)

Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. Laboratory 2 hours per week.

PED 105-106 Aerobic Dance I-II (1 CR, 1 CR)

Focuses on physical fitness through dance exercises. Emphasizes the development of cardiovascular endurance, muscular endurance, and flexibility. Laboratory 2 hours per week.

PED 107 Exercise and Nutrition I (2 CR)

Provides for the study and application of fitness and wellness and their relationship to a healthy lifestyle. Defines fitness and wellness, evaluates the student's level of fitness and wellness. Students will incorporate physical

fitness and wellness into the course and daily living. A personal fitness/wellness plan is required for the 2 credit course. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 109 Yoga (1 CR) Focuses on the forms of yoga training emphasizing flexibility. Laboratory 2 hours per week.

PED 111-112 Weight Training I-II (1 CR, 1 CR) Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. Laboratory 2 hours per week.

PED 120 - Yoga II (1 CR) Prerequisite: PED 109. Focuses on the forms of yoga training emphasizing flexibility. Laboratory 2 hours per week.

PED 123-124 Tennis I-II (1 CR, 1 CR) Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Laboratory 2 hours per week.

PED 129 Self-Defense (1 CR) Examines history, techniques, and movements associated with self-defense. Introduces the skills and methods of self-defense emphasizing mental and physical discipline. Laboratory 2 hours per week.

PED 133-134 Golf I-II (1 CR, 1 CR) Teaches basic skills of golf, rules, etiquette, scoring, terminology, equipment selection and use, and strategy. Laboratory 2 hours per week.

PED 135-136 Bowling I-II (2 CR, 2 CR) Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 137 Martial Arts I (2 CR) Emphasizes forms, styles, and techniques of body control, physical and mental discipline, and physical fitness. Presents a brief history of development of martial arts theory and practice. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 144 - Skin and Scuba Diving (2 CR) Emphasizes skills and methods of skin and scuba diving. Includes training with underwater breathing apparatus and focuses on safety procedures, selection and use of equipment. Prerequisite strong swimming skills. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 147 Hiking (1 CR) Introduces physical and mental benefits of walking or hiking as a form of physical exercise. Skills developed include how to plan for a hike, what to take, and how to select a trail relative to individual abilities. Provides hiking opportunities to explore local regions. Develops awareness of safety, weather, and ecological considerations. Laboratory 2 hours per week.

PED 149 Cardio Sculpt I (1 CR) Combines strength training and cardiovascular workouts that strengthen the major muscle groups as well as developing endurance. Laboratory 2 hours per week.

PED 154 Volleyball (1-2 CR) Introduces skills, techniques, strategies, rules, and scoring. Lecture 0-1 hours. Laboratory 2-4 hours per week.

PED 170 Tai Chi I (1 CR) Develops an understanding of the theories and practices of Tai Chi. Explores the energy of exercise that will tone muscles, improve circulation and increase flexibility and balance. Discusses history and philosophy of exercise and relaxation techniques for stress reduction. Laboratory 2 hours per week.

PED 183 Outdoor Adventures I (1 CR) Introduces outdoor adventure activities with emphasis on basic skills, preparation, personal and group safety, equipment selection and use, ecology, and field experience. Laboratory 2 hours per week.

PED 188 Freshwater Fishing (1 CR) Teaches freshwater fishing techniques including spinning, bait casting and fly casting. Presents selection and care of equipment, fish habits, conservation, and safety. Laboratory 2 hours per week.

PED 270 Tai Chi II (1 CR) Develops and understanding of the theories and practices of Tai Chi. Explores the energy of exercise that will tone muscles, improve circulation and increase flexibility and balance. Discusses history and philosophy of exercise and relaxation techniques for stress reduction. Laboratory 2 hours per week.

PHI – Philosophy

PHI 101 Introduction to Philosophy I (3 CR) Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Lecture 3 hours per week.

PHI 111 Logic I (3 CR) Introduces inductive and deductive reasoning, with an emphasis on common errors and fallacies. Lecture 3 hours per week.

PHI 220 - Ethics (3 CR) Provides a systematic study of representative ethical systems. Lecture 3 hours per week.

PHT - Photography

PHT 101-102 Photography I-II (3 CR)

Prerequisite for PHT 102: PHT 101. Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 164 Introduction to Digital Photography

(3 CR) Teaches the fundamentals of photography including camera function, composition, and image production as they apply to digital imagery. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 264 Digital Photography (3 CR) Prerequisite:

PHT 164 or divisional approval. Teaches theory and practice of digital photography. Emphasizes use of digital cameras in studio and on location. Teaches advanced techniques of image editing. Provides training in digital image transmission from remote locations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHY – Physics

PHY 201-202 General College Physics I-II (4 CR,

4 CR) Prerequisites: MTH 115 or MTH 163 or MTH 166 or equivalent and a placement recommendation for ENG 111 or successful completion of all required developmental English courses. A non-calculus introductory college physics sequence. Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity, magnetism, and selected topics in modern physics. Lecture 3 hours Laboratory 3 hours. Total 6 hours per week.

PHY 241-242 University Physics I-II (4 CR,

4 CR) Prerequisite: MTH 176 and MTH 178 or one year of college calculus. An introductory calculus-based physics sequence recommended for engineering, physics, computer science, and mathematics majors. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity and nuclear physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PLS – Political Science

PLS 211-212 U.S. Government I-II (3 CR, 3 CR)

Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Lecture 3 hours per week.

PLS 225 - The United States Presidency

(3 CR) Describes the modern American presidency. Focuses on the presidency and many issues related to that office; the people, the powers, and the current environment in which the presidents serve. Lecture 3 hours per week.

PLS 241 International Relations I (3 CR) Teaches

geographic, demographic, economic, ideological, and other factors conditioning the policies of countries and discusses conflicts and their adjustment. Lecture 3 hours per week.

PLS 242 International Relations II (3 CR) Teaches

foreign policies of the major powers in the world community with an emphasis on the role of the United States in international politics. Lecture 3 hours per week.

PNE - Practical Nursing

PNE 110-111 Practical Nursing Health and

Disease I-II (5 CR, 5 CR) Studies the pathophysiology, signs and symptoms, prescribed medical and surgical treatments, and appropriate nursing care for the patient with selected disorders. Lecture 5 hours per week.

PNE 116 - Normal Nutrition (1 CR) Introduces the

basic principles of good nutrition. Studies nutrients, their sources and functions, basic requirements for individuals. Includes a brief introduction to diet therapy. Lecture 1 hour per week.

PNE 120 Introduction to Nursing Process

(1 CR) Introduces the nursing process. Develops basic skills to ensure quality nursing care. Lecture 1 hour per week.

PNE 135 Maternal and Child Health Nursing

(5 CR) Examines pregnancy, childbirth, postpartum and newborn care from a family centered approach. Covers complications related to childbearing. Emphasizes growth and development and exploration of common childhood disorders at various stages. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

PNE 141-142 Nursing Skills I-II (3 CR, 3 CR)

Studies principles and procedures essential to the basic

nursing care of patients. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PNE 145 Trends in Practical Nursing (1 CR)
Studies the role of the Licensed Practical Nurse. Covers legal aspects, organizations, and opportunities in practical nursing. Designed to assist the student in preparation for employment. Lecture 1 hour per week.

PNE 155 Body Structure and Function (4 CR)
Studies the structure and function of the body. Lecture 4 hours per week.

PNE 156 Nursing Across the Life Span (4 CR)
Focuses on the principles of nursing relevant to assisting the individual during the growth and development process across the life span. Lecture 4 hours per week.

PNE 158 Mental Health and Psychiatric Nursing (2 CR)
Recognizes emotional needs of patients. Provides knowledge of the role that emotions play. Enables students to understand their own behavior as well as patient behavior. Lecture 2 hours per week.

PNE 174 Applied Pharmacology for Practical Nurses (2 CR)
Applies problem solving skills in preparing and administering medications. Studies history, classification, sources, effects, and legalities of drugs. Emphasizes major drug classes and specific agents within each class. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

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

PSY – Psychology

PSY 120 Human Relations (3 CR)
Introduces the theory and practice of effective human relations. Increases understanding of self and others and interpersonal skills needed to be a competent and cooperative communicator. Lecture 3 hours per week.

PSY 200 Principles of Psychology (3 CR)
Surveys the basic concepts of psychology. Covers the scientific study of behavior, behavioral research methods and analysis, and theoretical interpretations. Includes topics that cover physiological mechanisms, sensation/perception, motivation, learning, personality,

psychopathology, therapy, and social psychology. Lecture 3 hours per week.

PSY 215 Abnormal Psychology (3 CR)
Prerequisites: PSY 200, 201 or 202. Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Lecture 3 hours per week.

PSY 216 Social Psychology (3 CR)
Prerequisites: PSY 200, 201, or 202. Examines individuals in social contexts, their social roles, group processes and intergroup relations. Includes topics such as small group behavior, social behavior, social cognition, conformity, attitudes, and motivation. Lecture 3 hours per week.

PSY 220 Introduction to Behavior Modification (3 CR)
Studies the history of behaviorism and the principles and applications of behavior modification. Emphasizes observation and application of behavior modification principles. Lecture 3 hours per week.

PSY 225 Theories of Personality (3 CR)
Prerequisites: PSY 200, 201 or 202. Studies the major personality theories and their applications. Includes psychodynamic, behavioral, cognitive, and humanistic perspectives. Lecture 3 hours per week.

PSY 230 Developmental Psychology (3 CR)
Studies the development of the individual from conception to death. Follows a life-span perspective on the development of the person's physical, cognitive, and psychosocial growth. Lecture 3 hours per week.

PSY 235 Child Psychology (3 CR)
Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth. Lecture 3 hours per week.

PSY 236 Adolescent Psychology (3 CR)
Studies development of the adolescent. Investigates physical, intellectual, social, and emotional factors of the individual from late childhood to early adulthood. Lecture 3 hours per week.

RAD – Radiography

RAD 106 Introduction to Radiologic Science (2 CR)
Presents an overview of radiographic imaging techniques, basic equipment, and elements of film

processing. Stresses basic technical factors of image production and radiographic quality. Lecture 2 hours per week.

RAD 111-112 Radiologic Science I-II (4 CR, 4 CR)

Teaches concepts of radiation, radiography physics, fundamentals of electromagnetic radiation, electricity and magnetism, and application of these principles to radiography. Focuses on X-ray production, emission, and X-ray interaction with matter. Develops skills in analysis, quantification and synthesis, and applies problem-solving strategies. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 121 Radiographic Procedures I (4 CR)

Introduces procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the chest, abdomen, extremities, and axial skeleton. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 125 Patient Care Procedures (3 CR)

Presents the care and handling of the sick and injured patient in the Radiology Department. Introduces the fundamentals of nursing procedures, equipment, and supplies specific to radiology. Lecture 3 hours per week.

RAD 131-132 Elementary Clinical Procedures I-II (3 CR, 3 CR)

Develop advanced technical skills in fundamental radiographic procedures. Focuses on introduction to radiography, basic radiation safety, manipulation of equipment, patient care, osseous studies, skull procedures, and contrast studies. Provides clinical experience in cooperating health agencies. Clinical 15 hours per week.

RAD 190 Coordinated Internship (3 CR)

Prerequisite: RAD 132. Introduces advanced technical skills in fundamental radiographic procedures. Focuses on basic contrast media studies, osseous studies, and skull procedures. Provides clinical experiences in health care agencies. Clinical 15 hours per week.

RAD 205 Radiation Protection and Radiobiology (3 CR)

Studies methods and devices used for protection from ionizing radiation. Teaches theories of biological effects, cell and organism sensitivity, and the somatic and genetic effects of ionizing radiation. Presents current radiation protection philosophy for protecting the patient and technologist. Lecture 3 hours per week.

RAD 215 Correlated Radiographic Theory

(2 CR) Presents intensive correlation of all major radiologic technology subject areas. Studies interrelationships of biology, physics, principles of exposure, radiologic procedures, patient care, and radiation protection. Lecture 2 hours per week.

RAD 221 Radiographic Procedures II (4 CR)

Prerequisite: RAD 121. Continues procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the skull, contrast studies of internal organs, and special procedures employed in the more complicated investigation of the human body. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 231-232 Advanced Clinical Procedures I-II (5 CR, 5 CR)

Reinforces technical skills in fundamental radiographic procedures. Introduces more intricate contrast media procedures. Focuses on technical proficiency, application of radiation, protection, nursing skills, and exposure principles. Teaches advanced technical procedures and principles of imaging modalities, correlating previous radiographic theory, focusing on full responsibility for patients in technical areas, perfecting technical skills, and developing awareness of related areas utilizing ionizing radiation. Provides clinical experience in cooperating health agencies. Clinical 25 hours per week.

RAD 240 Radiographic Pathology (3 CR)

Presents a survey of common medical and surgical disorders that affect radiographic image. Discusses conditions related to different systems of the human body. Studies the correlation of these conditions with radiographs. Lecture 3 hours per week.

RAD 290 Coordinated Internship (4 CR)

Prerequisite: RAD 232. Provides additional experience in radiographic procedures, demonstrating skills in technical proficiency, patient care procedures, radiation protection, and evaluation of experience in cooperating health agencies. Clinical 20 hours per week.

REL – Religion

REL 200 Survey of the Old Testament (3 CR)

Surveys books of the Old Testament, with emphasis on prophetic historical books. Examines the historical and geographical setting and place of the Israelites in the ancient Middle East as background to the writings. Lecture 3 hours per week.

REL 210 Survey of the New Testament (3 CR)

Surveys the New Testament, with special attention upon placing the writings within their historical and geographical setting. Lecture 3 hours per week.

REL 230 Religions of the World (3 CR)

Introduces the religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 231-232 Religions of the World I-II (3 CR)

Studies religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 237 - Eastern Religions (3 CR)

Studies major religious traditions of the East including Hinduism, Buddhism, Confucianism, Taoism, and Zen Buddhism. Includes an analysis of Eastern philosophy and approach to life. Lecture 3 hours per week.

REL 247 History of Christianity (3 CR)

Surveys the development of Christianity from its origins to the present. Lecture 3 hours per week.

ROC – Radiation Oncology**ROC 110 Introduction to Radiation Oncology**

(2 CR) Presents an overview of the field of Radiation Oncology, focusing on medical and technical terminology, practices and procedures, treatment charts, roles of staff, clinical objectives, treatment modalities, and equipment. Other topics include patient care, psychosocial issues, ethics and legal considerations of patient management. Lecture 2 hours per week.

ROC 115 Therapeutic Radiation Safety (1 CR)

Presents an overview of radiation protection focusing on detection and measurement, shielding and room design, somatic and genetic effects, maximum permissible dose, surveys, source handling, personnel monitoring, and organizations and agencies that guide radiation protection procedures. Lecture 1 hour per week.

ROC 120 Radiation Oncology/Pathology I

(3 CR) Prerequisite: ROC 110. Introduces malignant pathology arising in each anatomical site, radiation treatment rationale, treatment techniques, and radiobiological response. Lecture 3 hours per week.

ROC 121 Radiation Oncology/Pathology II

(3 CR) Prerequisites: ROC 110, ROC 120. A continuation of Radiation Oncology I, which focuses on malignant pathology arising in each anatomical site, radiation treatment rationale, treatment techniques, and radiobiological response. Lecture 3 hours per week.

ROC 125 Pre-Clinical Techniques in Radiation Oncology (2 CR)

Focuses on basic technical skills in preparation for patient set up and treatment in the clinical setting. Emphasizes simulation and treatment parameters. Focuses on students gaining basic understanding of basic techniques and patient care skills through phantom and lab work prior to direct patient contact. Lecture 2 hours per week.

ROC 131 Clinical Clerkship I (4 CR)

Introduces students to the clinical setting and the basics of Radiation Oncology. Covers basic technical and patient care skills through supervised direct patient contact and phantom work. Lecture 1 hour. Laboratory 15 hours. Total 16 hours per week.

ROC 132 Clinical Clerkship II (5 CR)

Prerequisite: ROC 131. The student continues supervised direct patient contact and phantom work with focus on technical skills related to equipment manipulation. With minimal assistance the student should be able to perform basic treatment and simulation procedures as well as basic patient care skills. Clinical 25 hours per week.

ROC 141 Therapy Physics I (2 CR)

Prerequisites: ROC 110, MTH 163. Focuses on concepts of radiation production, interaction, and influencing factors. Emphasis is placed on atomic interactions and dose measurement techniques. Presents a comprehensive overview of the different types of machines used in Radiation Oncology. Lecture 2 hours per week.

ROC 142 Patient Care in Oncology (1 CR)

Focuses on the unique needs of the cancer patient, including: site specific side effects, pharmacology, skin care, psychological and nutritional support, and patient care in emergency situations. Explores use of chemotherapeutic agents. Lecture 1 hour per week.

ROC 145 Quality Improvement (2 CR)

Prerequisite: ROC 110. Methods for performing various quality assurance tasks will be discussed, including the medical record component, as well as standards and specification of therapeutic equipment. Allows the student to acquire the knowledge and ability to recognize inaccuracy of treatment delivery. Reviews warm-up guidelines. Lecture 2 hours per week.

ROC 151 Introduction to Cross-Sectional

Anatomy (2 CR) Prerequisites: ROC 121. Corequisite: ROC 120. Introduces the study of basic anatomic structures and pathologies through digital concepts of medical imaging with emphasis on principles and practices of Radiation Oncology and diagnostic radiography. Lecture 2 hours per week.

ROC 225 Emerging Technologies in Radiation Oncology (1 CR) Corequisite: ROC 232. Focuses on new and advanced techniques in Radiation Oncology. Emphasizes emerging procedures in simulation and treatment relative to tumor site and modality. Lecture 1 hour per week.

ROC 231 Clinical Clerkship III (5 CR) Prerequisite: ROC 132. A continuation of Clinical Clerkship II, introduces the student to intermediate and complex treatment and simulation procedures as well as dosimetry, beam modification devices and brachytherapy competencies. The student should demonstrate proficiency in equipment manipulation and intermediate patient care skills. Clinical 25 hours per week.

ROC 232 Clinical Clerkship IV (5 CR) Prerequisite: ROC 231. The student performs intermediate procedures with minimal assistance and demonstrates comprehension of tasks related to complex procedures. During this clerkship the student should demonstrate the ability to work more independently. Clinical 25 hours per week.

ROC 241 Therapy Physics II (2 CR) Prerequisite: ROC 141. Studies methods and devices used for measurement of and protection from ionizing radiation. Discusses types of brachytherapy applicators and dose distributions systems and includes brachytherapy dose calculation exercises. Introduces electron beam dosimetry. Lecture 2 hours per week.

ROC 242 Clinical Radiobiology (2 CR) Prerequisites: ROC 110 and ROC 120. Corequisite: ROC 121. This course is an advance study into the principles of biologic responses to radiation. Focuses on the events that occur following absorption of energy from radiation at the cellular, tissue, and systemic whole body levels, and factors that influence the effects. Lecture 2 hours per week.

ROC 243 Dosimetry Planning (2 CR) Prerequisites: ROC 110, MTH 163. Introduces clinical dosimetry and treatment planning to include various treatment techniques, calculations, equations, and beam arrangements. Lecture 2 hours per week.

ROC 244 Professional Seminar (2 CR) Prerequisites/Corequisites: All Radiation Oncology Core Courses. Designed to correlate all major radiation oncology subject areas in preparation for national certification. Lecture 2 hours per week.

RVH - RV/Motorcycle Maintenance
RVH 130 Motorcycle Rider Safety - Beginner

(1 CR) Studies principles and basic skills of motorcycle riding with an emphasis on safety. Includes street strategies, protective gear, and selection and care/maintenance of motorcycles. Lecture 1 hour per week.

SAF – Safety

SAF 127 Industrial Safety (2 CR) Provides basic understanding of safety and health in an industrial situation. Includes hazardous materials, substances, conditions, activities and habits as well as the prescribed methods and equipment needed for the apprentice to protect himself/herself and others. Class attendance and completion of this course satisfies the 10-hour requirement to sit for the OSHA certification exam. Lecture 2 hours per week.

SDV – Student Development

SDV 100 College Success Skills (1 CR) Assists students in transition to college. Provides overviews of college policies, procedures, and curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and math placement testing. Strongly recommended for beginning students. Required for graduation. Lecture 1 hour per week.

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

SDV 104 Study Skills (1–3 CR) Assists students in planning strategies to overcome nonproductive study habits and in implementing positive study behaviors. Includes management, memory improvement, notetaking, and test-taking. Lecture 1-3 hours per week.

SDV 106 Preparation for Employment (1 CR) Provides experience in resume writing, preparation of applications, letters of application, and successfully preparing for and completing the job interview. Assists students in identifying their

marketable skills and aptitudes. Develops strategies for successful employment search. Assists students in understanding effective human relations techniques and communication skills in job search. Lecture 1 hour per week.

SDV 107 Career Education (1 CR) Surveys career options available to students. Stresses career development and assists in the understanding of self in the world of work. Assists students in applying decision making to career choice. May be substituted for SDV 100. Lecture 1 hour per week.

SDV 108 College Survival Skills (1 CR) Provides an orientation to the College. Introduces study skills, career and life planning. Offers an opportunity to engage in activities aimed at self-discovery. Emphasizes development of “coping skills” such as listening, interpersonal relations, competence, and improved self- concept. Recommended for students enrolled in developmental courses. Lecture 1 hour per week.

SOC – Sociology

SOC 200 Principles of Sociology (3 CR) Introduces fundamentals of social life. Presents significant research and theory in areas such as culture, social structure, socialization, deviance, social stratification, and social institutions. Lecture 3 hours per week.

SOC 215 Sociology of the Family (3 CR) Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife interaction, single parent families, and alternative lifestyles. Lecture 3 hours per week.

SOC 266 Race and Ethnicity (eff. Fall 2012) (3 CR) Investigates minorities such as racial and ethnic groups. Addresses social and economic conditions promoting prejudice, racism, discrimination, and segregation. Lecture 3 hours per week.

SOC 268 Social Problems (3 CR) Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament. Lecture 3 hours per week.

SPA – Spanish

SPA 101-102 Beginning Spanish I-II (4 CR, 4 CR) Prerequisite for SPA 102: SPA 101. Introduces

understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. Lecture 4 hours per week.

SPA 201-202 Intermediate Spanish I-II (3 CR, 3 CR) Prerequisites: For SPA 201, prerequisite is SPA 102. for SPA 202: SPA 201. Continues to develop understanding, speaking, reading, and writing skills. Spanish is spoken in the classroom. Lecture 3 hours per week.

TEL – Telecommunications

TEL 150 Internetworking I (4 CR) Network Fundamentals introduces the functions of each layer of the ISO/OSI reference model, data link and network addresses, data encapsulation, different classes of IP addresses and subnetting and the functions of the TCP/IP network-layer protocols. This course is part of the Cisco Networking Academy™, and all changes are in keeping with the requirements of Cisco. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

TEL 151 Internetworking II (4 CR) Prerequisite: TEL 150. Routing Protocols and Concepts teaches features of the Cisco IOS software, including log in, context-sensitive help, command history and editing, loading software, configuring and verifying IP addresses, preparing the initial configuration of a router, and adding routing protocols to the router configuration. This course is part of the Cisco Networking Academy™, and all changes are in keeping with the requirements of Cisco. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

TEL 250 Internetworking III (4 CR) Prerequisite: TEL 150 or ITN 112 with divisional approval. LAN Switching and Wireless studies the advantages of LAN segmentation using bridges, routers, and switches, Fast Ethernet configuring access lists; Spanning Tree Protocol; and Virtual LANs. This course is part of the Cisco Networking Academy™, and all changes are in keeping with the requirements of Cisco. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

TEL 251 Internetworking IV (4 CR) Prerequisite: TEL 151 and TEL 250. Accessing the WAN focuses on the differences between the following WAN services: LAPB, Frame Relay, ISDN/LAP, HDLC, PPP, and DDR. This course is part of the Cisco Networking Academy™, and all changes are in keeping with the requirements of Cisco. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

VEN – Viticulture and Enology

VEN 100 - Introduction to Viticulture (3 CR)

Introduces grapes, their history, distribution, classification, and areas of production. Provides an overview of grape uses and products made from them. Includes site selection and environmental factors that affect grapes and their quality. Lecture 3 hours per week.

VEN 110 - Vineyard Establishment (3 CR)

Reviews sites, soils, and other factors that affect the planting of grapes. Covers vineyard designs, varieties, and the training of newly planted vines. Includes weed control and pest management of new vines. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

VEN 125 - Vineyard Management (3 CR)

Prerequisite: VEN 121 or divisional approval. Studies the overall practices involved in vineyard management with emphasis on diseases and insects as they affect overall quality of grapes. Surveys grape harvest and grape maturity as it affects wine quality. Provides hands-on experience in the harvest process. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

WEL – Welding

WEL 116 Welding I (Oxyacetylene) (2 CR)

Teaches oxygen/acetylene welding and cutting including safety of equipment, welding, brazing, and soldering procedures and cutting procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 120 Introduction to Welding (3 CR)

Introduces history of welding processes. Covers types of equipment and assembly of units. Stresses welding procedures such as fusion, non-fusion, and cutting oxyacetylene. Introduces arc welding. Emphasizes procedures in the use of tools and equipment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

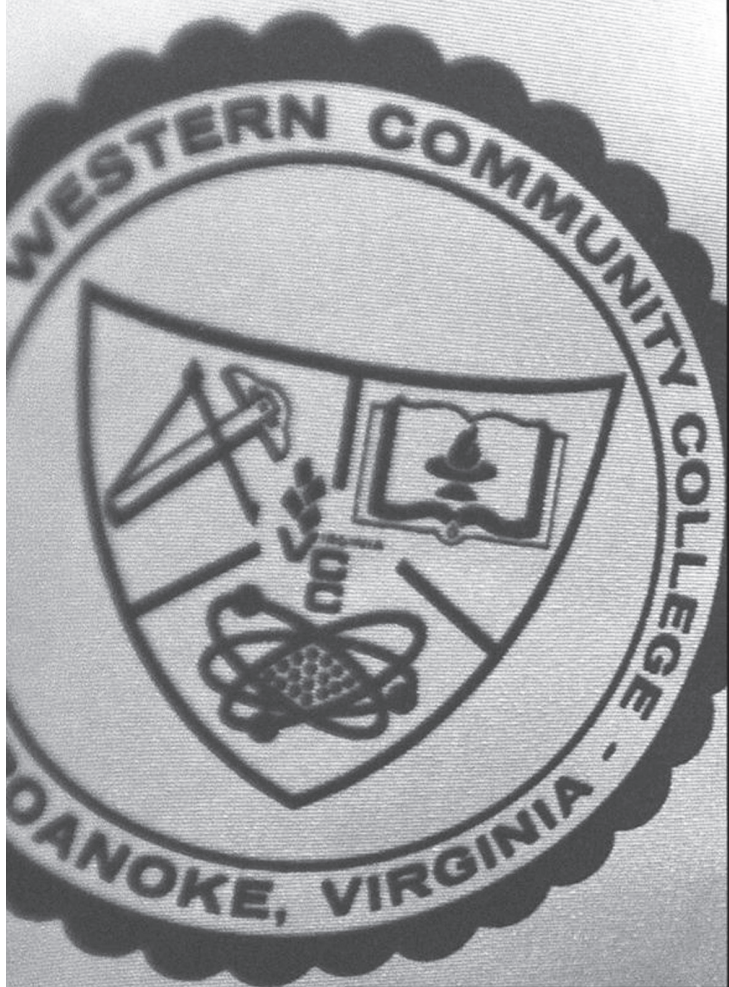
WEL 121 ARC Welding (2 CR) Prerequisite: WEL 120 or divisional approval. Studies the operation of AC and DC power sources, weld heat, polarities and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 130 Inert Gas Welding (3 CR) Prerequisite: WEL 120 or divisional approval. Introduces practical operations in the uses of inert-gas-shield arc welding. Discusses equipment, safety operations, welding practice in the various positions, process applications, and manual and semi-automatic welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 135 Inert Gas Welding (2 CR) Prerequisite: WEL 120 or divisional approval. Introduces practical operations in use of inert gas shielded arc welding. Studies equipment operation, setup, safety, and practice of GMAW (MIG) and GTAW (TIG). Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 136 Welding III (Inert Gas) (2 CR) Studies Tungsten and metallic inert gas procedures and practices including principles of operation, shielding gasses, filler rods, process variations and applications, manual and automatic welding, equipment and safety. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

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



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Whether you intend to earn an occupational or technical degree, transfer to a four-year institution, acquire and improve skills to advance in your current career or begin a new one, or just wish to enrich your life through higher education, we'll take you there.

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