

NHTI, Concord's Community College

# **Academic Course Descriptions 2014-2015**



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Number sequencing to the right of the course name means the following: first digit designates the number of lecture hours for the course; the second digit designates the number of lab, clinic or practicum hours; and the third digit designates the credit hours for the course.

**Prerequisite:** a course that must be passed prior to proceeding with a more advanced course; minimum passing grade for a prerequisite course is a "D minus" unless otherwise indicated.

**Corequisite:** a course that must be taken concurrently (at the same time) with another course. (Note that with departmental permission, a corequisite course may sometimes be taken in advance of the course for which it is a corequisite.)

Course descriptions are presented by subject heading with corresponding lettered course designator.

**Courses numbered 100-199:** These courses are typically introductory and/or freshman-level courses. Some may require assessment testing and/or completion of prerequisites prior to enrollment.

**Courses numbered 200 or higher:** Instruction in these courses assumes that students will have successfully completed one or more semesters of college level study prior to enrollment. Additionally, some courses may require one or more specific prerequisites.

## Accounting

### **AC 101 Accounting I 3-0-3**

An introduction to accounting procedures and principles covering the accounting cycle, accounting for a merchandising business, special journals, control over cash, receivables, and inventories. A grade of C- or higher must be achieved to continue with the next accounting course.

### **AC 102 Accounting II 3-0-3**

A continuation of the fundamentals of accounting concepts and procedures, including the following topics: depreciation, payroll, notes payable, bonds, partnerships and corporations. A grade of C- or higher must be achieved to continue with the next accounting course. (Prerequisite: a grade of C- or better in AC 101)

### **AC 110 Managerial Accounting 3-0-3**

A study of the analysis, reporting and use of accounting data as a management tool for planning, control and decision making. Specific areas of study include break-even analysis, financial statement analysis, cost classification and allocation, standard costing and variance analysis, and budgeting. (Prerequisite: AC 102)

### **AC 205 Intermediate Accounting I 4-0-4**

A review of the overall accounting cycle, followed by an in-depth study of accounting concepts and FASB statements dealing with topics to include balance sheets, income statements, receivables, inventories, and cash flows. (Prerequisite: AC 102)

### **AC 206 Intermediate Accounting II 4-0-4**

A study of accounting principles dealing with asset acquisition and retirements, long term investments, current and contingent liabilities, debt securities and equity securities, capital structure of corporations, revenue recognition, and leases. (Prerequisite: AC 205)

### **AC 230 Taxes 4-0-4**

A study of the Internal Revenue Tax Code as it relates to individuals and small businesses. This course will include an examination of income recognition, deductions for and from AGI, tax credits, depreciation calculations and analysis of capital gains and losses. The student will apply this knowledge in preparation of income tax returns and related forms. (Prerequisite: AC 102 or permission of department head of Accounting)

### **AC 250 Cost Accounting 3-0-3**

Provides cost accounting fundamentals including manufacturing statements, job cost systems, process cost systems, standard costs and cost analysis. (Prerequisite: AC 102)

## Addiction Counseling

### **AD 115 Fundamentals of Criminal Justice-Oriented Addiction Treatment 3-0-3**

The course will focus on those modalities of addiction

treatment that are conducted with the criminal justice population. The student will be prepared for employment in diversion programs, drug courts, prison-based treatment programs, multiple offender programs, prison-based half-way houses, therapeutic communities, methadone maintenance and other detoxification programs. Appropriate interaction with criminal justice/addiction treatment personnel will enable the student to work cooperatively within their shared systems. The writing of assessment and global individual service plans for use in course and mandated treatment will be studied. Patient monitoring and logical consequences methodology for clients will be learned. (Prerequisites: CJ 101, AD 120 and MH 187)

### **AD 120 Survey of Addictive Behaviors and Treatment 3-0-3**

A study of addictive behaviors and treatment from a multimodal presentation of historical, sociological, political and medical issues and their importance relative to the treatment of addictive behaviors in today's society.

### **AD 205 Fundamentals of Dependency Counseling Skills 3-0-3**

This course includes a comprehensive and detailed study of application both in documentation and treatment of the 12 core functions. Emphasis will be on preparation for on-site practice and for eventual state and national licensure and certification. (Prerequisite: AD 120 or permission of department head of Human Service)

### **AD 215 Internship: Orientation to Addictive Behaviors Counseling with Criminal Justice Clients 2-8-4**

This internship experience offers 30 hours of classroom-based clinical supervision in support of 125 hours of field work in an approved criminal justice addiction treatment setting. The student, supervised by a Licensed Alcohol and Drug counselor experienced in criminal justice treatment techniques will, through observation and actual clinical contact, practice the fundamental skills of counseling addictive behaviors with criminal justice clients. (Prerequisites: CJ 101, AD 120, MH 187, CJ 150, CJ 215 and AD 115, with a minimum combined GPA of 2.0)

### **AD 235 Physiology and Pharmacology of Addiction 3-0-3**

An in-depth study of psychopharmacological aspects of drugs is covered including a study of brain and body drug metabolism, medical complications and the treatment of psychiatric disorders as outlined in the DSM-IV. Alcohol and drug detoxification and sobriety maintenance and practices will be addressed. (Prerequisite: AD 120 with a grade of "C" or higher or with permission of the department head of Human Service)

### **AD 270 Advanced Seminar in Addictive Behaviors Counseling 3-0-3**

A study of addictive behaviors counseling modalities and skills appropriate to the specific needs of varied client/patient populations in different treatment settings. Clinical case study will be directed toward familiarization with the process of state Licensed Alcohol and Drug Counseling (LADC) application, written case format submission, and the written and oral credentialing examinations. (Prerequisites: all AD courses; corequisite: AD 295)

### **AD 294 Internship I: Orientation to Addictive Behaviors Counseling\* 2-12-6**

The first internship experience offers 30 hours of classroom-based group clinical supervision in support of 180 hours of field work in an approved clinical setting. The student initially learns to integrate into an agency atmosphere within which they may research, observe, role-play and practice the fundamental skills of screening, intake, orientation, assessment, treatment planning, counseling, case management, crisis intervention, client education, referral, record keeping and consultation. (Prerequisites: AD 120, AD 205, HU 111, MH 187, PY 105, PY 220 and PY 283, with a combined major field GPA of 2.0)

### **AD 295 Internship II: Orientation to Addictive Behaviors Counseling\* 2-12-6**

The second internship experience offers 30 hours of classroom-based group clinical in support of 180 hours of field work in an approved clinical setting. The student assumes increased responsibility culminating in substantial use of the fundamental skills of screening, intake, orientation, assessment, treatment planning, counseling, case management, crisis intervention, client education, referral, record keeping and consultation in direct contact with clients/patients. A greater understanding of available treatment resources is accomplished via an inspection of the state-wide continuum-of-care. (Prerequisite: AD 294)

### **AD 296 Addiction Practicum I\* 2-8-4**

The first internship experience offers 30 hours of classroom-based group clinical supervision in support of 125 hours of fieldwork in an approved clinical setting. The student initially learns to integrate into an agency atmosphere within which they may research, observe, role-play and practice the fundamental skills of screening, intake, orientation, assessment, treatment planning, counseling, case management, crisis intervention, client education, referral, record keeping and consultation. (Prerequisites: AD 120, AD 205, HU 111, MH 187, PY 105, PY 283 and HU-242, with a combined major field GPA of 2.0; PY 220 may be taken as a pre-or corequisite)

### **AD 297 Addiction Practicum II\* 2-8-4**

The second internship experience offers 30 hours of classroom-based group clinical supervision in support of 125 hours of fieldwork in an approved clinical setting. The student assumes increased responsibility culminating in substantial use of the fundamental skills of screening, intake, orientation, assessment, treatment planning, counseling, case management, crisis intervention, client education, referral, record keeping and consultation in direct contact with clients/patients. A greater understanding of available treatment resources is accomplished via an inspection of the state-wide continuum-of-care. (Prerequisite: AD 296 and all other prerequisites required.)

**\* The student will also complete an interview with the practicum coordinator the semester prior to the first scheduled practicum. Special requests regarding practicum entrance may be brought to the department head by the student. Review of the requests will be made by the department faculty and special exemptions may be made for entrance into the practicum.**

## **Advanced Manufacturing Processes**

### **MP 101 Manufacturing Processes I 2-6-4**

This course covers fundamentals of machining processes using traditional machine tools: lathe, milling machine, surface grinder, and cutoff saw. An in-depth coverage of shop safety is presented. The use of standard precision measuring tools including micrometers, dial calipers, vernier scales, etc. is presented. Basic machine setup practices and common cutting tool materials are introduced. Machining operations: turning, milling, grinding, drilling, boring, reaming, and tapping are covered. The lab portion of the course allows students to apply classroom theory to actual machine tools using precision measuring tools. (Prerequisites or Corequisites: MP 104 and MP 105).

### **MP 102 Manufacturing Processes II 2-6-4**

A continuation of Manufacturing Processes I, with emphasis on the student gaining more experience and time on actual machine tools. Theory in the lecture will include more advanced topics involving precision tool making, inspection and gaging, and fixture design.

### **MP 104 Applied Shop Mathematics I 3-0-3**

This course covers various shop related mathematics. It begins with a review of decimals and fractions. Basic algebra techniques are introduced and practiced. A review of basic geometry and right angle trigonometry techniques will be covered in detail. Applications from machine shop practice are used so that the student understands the method of technical problem solving using mathematics as a tool.

### **MP 105 Engineering Drawing I 3-0-3**

Understanding and interpreting engineering drawings is an essential tool for the machine tool technician. Basic engineering drawing practices will be covered including, multi-view projection, dimensioning, section and auxiliary views, basic GD&T concepts, hole/thread callouts. Sketching assignments will reinforce common drawing practices and conventions. While the course focuses on reading and understanding drawings, a basic introduction to Computer Aided Design, CAD will be included.

### **MP 110 CNC Programming & Operation I 3-3-4**

This course covers fundamentals of computer numerical control, CNC. Basic programming and operation of CNC machines are covered. The course begins with manual programming practices so that the student will understand the programming code and its structure. Standard safety conventions will be introduced for safe programming practice. Computer simulation exercises will facilitate the learning process as the student gains practice in checking and trouble-shooting programs. The basic operation of CNC milling machines and lathes are covered. The lab uses software simulations where students test their program prior to use on the CNC machines, and actual CNC machine operation. The lab is geared so that students will understand what and how the program and machine will function. (Prerequisite: MP 101)

### **MP 112 CNC Programming & Operation II 3-3-4**

This course is a continuation of CNC Programming &

Operation I. Advance programming methods and practices are covered in more detail. An introduction to computer aided manufacturing, CAM, is used to generate more complex part geometries using a software package. Advanced machine operations will also be covered such as 4-axis programming and machining. The lab will allow the student to practice programming skills and give them additional practice time on actual CNC machines. (Prerequisite: MP 110.)

#### **MP 114 Applied Shop Mathematics II 3-0-3**

This is a second course in Applied Shop Mathematics covering in-depth practical mathematical problems taken from the machine tool industry. Emphasis is placed on applied geometry and applied trigonometry using various techniques and methods to solve complex toolroom type machine problems. (Prerequisite: MP104)

#### **MP 115 Engineering Drawing II 2-2-3**

This is a second course in reading, interpreting, and analyzing engineering drawings and the information conveyed to the machine operator or tool maker. This course will give the student more exposure to engineering drawings and a better understanding for interpretation of the information presented. Students will also create hand sketches and be introduced to a Computer Aided Design, CAD, software to create working drawings. (Prerequisite: MP105)

#### **MP 120 Material Properties 2-0-2**

Machining processes involve both workpiece and cutting tool materials. Various metal workpiece materials used in the manufacturing industry will be studied. Their behavior due to their characteristics and mechanical properties as well as machinability will be the focus. Heat treatment of metals will be covered to show how properties can be altered especially in relation to tool making. Cutting tool materials and their behavior in the machining processes will be studied as well. (Prerequisites: MP101)

#### **MP 203 Manufacturing Processes III 1-9-4**

A third course in Manufacturing Processes covers complicated machine tool techniques and processes used in general machine shop practice. High precision machine work is the focus with tool making projects. Students will make various complicated lab projects which reflect tool making ability. (Prerequisite: MP102)

#### **MP 204 Manufacturing Processes IV 1-9-4**

A fourth course in Manufacturing Processes covers more elaborate tool making concepts and techniques. Lab projects include complicated machining of high tolerance parts. Laboratory work will include the traditional manual machines as well as CNC machining centers. (Prerequisite: MP203)

#### **MP 215 GD&T: Geometric Dimensioning & Tolerancing 2-0-2**

This course will focus on using ANSI Y14.5M standard for Dimensioning and Tolerancing commonly known as GD&T. Many companies working with government contracts are required to use the latest standards. Students need to be able to clearly interpret and understand the symbology and nomenclature used on engineering drawings. This course will

also focus on inspection techniques used to verify drawing callouts referenced in the standard. (Prerequisite: MP115)

#### **MP 220 Computer Aided Manufacturing (CAM) (2-0-2)**

Computer Aided Manufacturing software, CAM, will be used to create CNC G-code programs for CNC machining centers. Students will learn how CAD and CAM software work together. A CAD 3-D solid model is imported into a CAM program, various tool paths are created and simulated; and a G-code CNC program is generated to operate the CNC machine tool. (Prerequisite: MP115)

## **Allied Dental Education**

A grade of "C" or higher is required in BI 195, BI 196, BI 202 and CH 110 to progress in the Dental Hygiene Program

#### **DN 100 Dental Hygiene I 2-0-2**

An introduction to the theories and principles of the delivery of dental hygiene care, including evaluation of the patient, professional and clinical services. Emphasis will be placed on current concepts in preventive dentistry.

#### **DN 103 Dental Hygiene II 2-0-2**

An introduction to common systemic diseases with emphasis on dental hygiene treatment planning and management of medical and dental emergencies. Topics discussed during seminar include substance abuse, stress, occupational and environmental hazards and special needs patients. (Prerequisite: BI 195 with a minimum grade of "C," DN 100, DN 113 and DN 134)

#### **DN 105 Dental Radiology for Dental Assisting 2-3-3**

Lectures and demonstrations are coordinated with laboratory practice on mannequins to develop mastery of dental radiographic techniques to include digital radiography, processing, mounting and evaluating films. Emphasis will be placed on client and operator protection, exposure and processing errors, asepsis protocol, radiographic techniques and equipment function. Two clients will be scheduled near the end of the term when students exhibit acceptable and safe skills.

#### **DN 110 Dental Assisting Science I 3-0-3**

A study of the anatomy of the head, emphasizing the osteological landmarks and the structures of the oral cavity. Both the permanent and primary dentitions are studied, including embryonic development and eruption patterns. In addition, an introduction to the structure and function of the human body systems in health and disease will be presented.

#### **DN 111 Dental Assisting Science II 2-0-2**

An introductory study of drugs with specific consideration of those used in dentistry. Emphasis on drug origin, properties, dosages and therapeutic effects. Studies in oral pathology will include signs and symptoms of the diseases common to the oral cavity to include neoplastic disease and the inflammatory response. (Prerequisite: DN 110)

#### **DN 113 Clinical Dental Hygiene I 1-8-3**

A pre-clinical course for the development and application of

information relating to preventive dental hygiene services. Includes topics on asepsis, infection control, gathering and evaluating patient medical and dental histories, legal and ethical considerations, body mechanics, intra and extra oral exams, and instrumentation. Use of adjunct dental hygiene aids is also taught. Skills will be practiced on student partners. A classroom seminar for learning activities and group discussion is included. (Corequisites: DN 100 and DN 134)

#### **DN 114 Clinical Dental Hygiene II 1-8-3**

Clinical Dental Hygiene II is a continuation of Clinical Dental Hygiene I. Students will apply techniques learned in Clinical Dental Hygiene I directly on clinical patients. Emphasis is placed on the introduction of additional dental hygiene instruments, as well as dental health education techniques. A classroom seminar for learning activities and group discussion is included. (Prerequisites: DN 100, DN 113, and DN 134).

#### **DN 126 Nutrition 2-0-2**

Essentials of adequate diet, vitamin and nutritional balances/imbbalances, emphasizing total body health and dental care are discussed. Emphasis is placed on oral manifestations of nutritional diseases, dietary analysis and counseling for the prevention of cavities and periodontal disease.

#### **DN 134 Oral Anatomy I 2-1-2**

A detailed study of the anatomy of the deciduous and permanent dentitions. Also included is tooth eruption and basic dental terminology. This course includes laboratory sessions which are coordinated with lectures to provide practical applications of dental anatomy.

#### **DN 136 Oral Anatomy II 2-0-2**

A detailed study of the embryonic development and anatomy of the hard and soft tissues of the face and oral cavity. Study of the anatomical structure of the head and neck with emphasis on the cranial nerves, muscles of mastication and facial expression, temporomandibular joint, vascular and lymphatic systems, tooth development and histology of dental tissues and supporting structures. (Prerequisite: BI 195 with a minimum grade of "C," DN 113 and DN 134)

#### **DN 140 Dental Radiology for Dental Hygiene 2-3-3**

Lectures and demonstrations are coordinated with laboratory practice on mannequins to develop mastery of dental radiographic techniques as well as processing, mounting and evaluating films. Other topics include the principles of digital radiography, radiographic interpretation, radiographic landmarks and localization techniques. Emphasis will be placed on patient and operator protection and equipment function. Patients will be scheduled near the end of the term when students exhibit acceptable skills. (Prerequisites: DN 100 and DN 134; corequisites: DN 136 and DN 114)

#### **DN 155 Oral Hygiene Education/Nutrition 2-0-2**

Methods of preventive oral hygiene education, including patient motivation, will be discussed. Lectures in nutrition will stress the importance of good eating habits in

maintaining optimal general and dental health. Emphasis will be given to the essential role of the dental assistant in counseling the patient in these disciplines. (Prerequisite: DN 110)

#### **DN 161 Dental Materials-DA 2-3-3**

Study of the composition and properties of materials used in dentistry. Laboratory sessions emphasize practice in manipulation of various materials.

#### **DN 162 Dental Materials-DH 2-3-3**

An introduction to the composition and properties of dental materials with emphasis on materials currently utilized in dental and dental hygiene treatments. Laboratory sessions are coordinated with lectures to provide practice in manipulation of materials with emphasis on impression taking and preparation of study casts. (Prerequisite: CH 110 with a minimum grade of "C," DN 100, DN 113 and DN 134; or permission of the department head of Allied Dental Education)

#### **DN 175 Dental Assisting Theory I 2-0-2**

A course designed to teach the dental assisting student clinical techniques. Includes information on sterilization and disinfection techniques, charting, and the use of dental equipment and instruments. Students are introduced to four-handed chairside assisting as it pertains to all types of dental procedures including oral evacuation, instrument transfer, tray set-ups, and completing dental clinical records. Emphasis is placed on the dental health team concept. Ethics and jurisprudence will also be discussed.

#### **DN 182 Office Procedures and Management with Computer Applications 1-0-1**

Development of working knowledge of office procedures to include telephone techniques, appointment scheduling and filing systems. Lectures will include fundamentals of bookkeeping systems, prepaid dental care plans, payroll and inventory control. Information from lecture topics will be integrated into Dental Assisting Theory II with the use of specialized office management software. (Prerequisite: DN 110)

#### **DN 191 Dental Assisting Clinical Experience I 0-4-1**

Clinic sessions are coordinated with lectures in preclinical theory. Demonstration and practice of all procedures in simulated clinical situations.

#### **DN 196 Dental Assisting Clinical Experience II 0-15-5**

Experience in a dental office performing chair-side assisting, laboratory procedures, office procedures, and exposing, processing and mounting radiographs. (Prerequisites: DN 105, DN 110, DN 161, DN 175 and DN 191)

#### **DN 201 Dental Hygiene III 2-1-2**

Lectures in periodontology with emphasis on the hygienist's role in detection and treatment of periodontal disease. Techniques of patient evaluation, instrumentation and prevention are taught in lecture and implemented in the laboratory/clinic situation. (Prerequisites: DN 103, DN 114, DN 136, and DN 140)

**DN 212 Clinical Dental Hygiene III 1-12-4**

Practical application of dental hygiene theories and techniques with emphasis on individual patient's oral health needs and the further development of oral prophylactic and radiographic techniques, including the preparation of diagnostic aids and patient education. Students will gain experience through work in their on-campus clinical assignments. (Prerequisites: DN 114 and DN 201)

**DN 221 Clinical Dental Hygiene IV 1-12-4**

Practical application of dental hygiene theories and techniques with emphasis on individual patient's oral health needs and the further development of oral prophylactic and radiographic techniques, including the preparation of diagnostic aids and patient education. Students will gain experience through work in their on-campus clinical assignments. (Prerequisite: DN 212)

**DN 225 Dental Hygiene Community Clinic 0-4-1**

Practical application of dental hygiene theories and techniques with emphasis on the oral health needs of special patient populations. Students will gain experience in a variety of educational and public health settings. (Prerequisites: DN 114 and DN 201)

**DN 227 Dental Ethics and Jurisprudence 1-0-1**

A study of the ethical and legal issues involved in dental care delivery as well as office management procedures.

**DN 239 Medical Emergencies for the Dental Assistant 2-0-2**

Identification of signs, symptoms and action recommended in emergencies encountered in the dental office. Students will actively participate in role playing each emergency situation. (Prerequisite: DN 110)

**DN 242 Community Dental Health I 2-0-2**

Students will gain information in dental public health. Emphasis is on planning, education, healthcare promotion, epidemiology, evidenced-based research, basic biostatistics, cultural competence, and healthcare financing. (Prerequisite: DN 201)

**DN 243 Community Dental Health II 1-0-1**

Students will implement the theory base from DN 242 into the spring semester with practical applications of the DN 242 course content. The course will entail completion of various projects and assignments with a community emphasis. (Prerequisites: DN 201, DN 212 and DN 242)

**DN 245 Pain Management for the Dental Hygienist 1-3-2**

This course will provide a comprehensive program of study designed to provide dental hygiene students with the knowledge and skills necessary to effectively administer block and infiltration anesthesia, as well as nitrous oxide sedation. The course will include classroom, laboratory and clinical instruction. Participants will work in groups of two or three and administer local anesthesia and nitrous oxide analgesia on each other. Upon successful completion of this course, and upon graduation, participants will have completed the educational requirements for local anesthesia and nitrous oxide licensure in New Hampshire.

(Prerequisites: DN 100, DN 113, DN 103, DN 134, DN 136, DN 140, and DN 114)

**DN 247 Dental Hygiene Science - Pharmacology 2-0-2**

Pharmacology emphasizes the study of drug origins, properties, dosages, and therapeutic effects. Specific consideration is given to those drugs used in dentistry and anesthesiology. (Prerequisites: BI 195, BI 196 and BI 202 with minimum grades of "C" and DN 136)

**DN 248 Dental Hygiene Science - Oral Pathology 2-0-2**

Oral pathology includes the study of diseases affecting the oral cavity, manifestations of inflammation, degenerative changes, neoplastic disease, and anomalies. Oral pathology prepares the student to detect deviations from normal in the assessment of a client's systemic and oral health status and to make appropriate decisions regarding referral and treatment when needed. (Prerequisites: BI 195, BI 196 and BI 202 with minimum grades of "C" and DN 136)

**DN 275 Dental Assisting Theory II 1-2-2**

A course designed to introduce the dental advanced functions to dental assisting students. Includes instruction in basic instrumentation concepts, removal of coronal cement, application of pit and fissure sealants and suture removal, as well as expanded orthodontic functions and other advanced duties which are delegated to the dental assistant. Pre-clinical skills will be introduced on mannequins and competency skills on patients. Advanced dextrix computer applications will also be included. (Prerequisites: DN 105, DN 110, DN 161, DN 175 and DN 191)

**DN 298 Dental Assisting Clinical Experience III 2-8-4 (6 weeks)**

Expanded opportunities in chair-side assisting to encompass all dental specialties including orthodontics, surgery, endodontics, pedodontics and prosthodontics. A weekly seminar is held to evaluate the individual clinical experiences. (Prerequisite: DN 196)

## Animation and Graphic Game Programming

**In addition to listed prerequisites, students must earn grades of "C" or higher in each major field course and AGGP prerequisite to progress in the program.**

**AG 101 Introduction to Game Design and Creation with Programming 2-3-3**

This course will focus on two major aspects of computer gaming. The first focus will be the overview of games and their development. Career paths in the entertainment field will be reviewed. Critical criteria for gaming success will be researched. Game design concepts to be covered include the history of game programming, game psychology, and creating a game design outline. The second focus will be the hands on development of games, with all their major features incorporated, using a scripting language, such as available in Adobe Flash. Recommend taking or have taken CP107 or have basic programming skills. In addition, have a working knowledge of Windows operating system. **A grade of C or**



**higher must be achieved to meet the prerequisite criteria for subsequent major field courses.**

### **AG 103 Introduction to Content Development 2-2-3**

This course is designed for students entering the AGGP program to gain practical experience in developing content using applications, techniques, and standards used by the game industry. This course includes an introductory overview of image editing and manipulation, sprites, tiles, and tile based worlds. Course material is reinforced through with hands on assignments and the creation of a portfolio. (Prerequisite: Working knowledge of current desktop operating systems) **Students who do not intend to enter the AGGP Program should instead consider enrolling in VRTS 193: Introduction to Photoshop.**

### **AG 110 Math and Physics for Game Programmers 2-3-3**

Math and physics play key roles in game programming. Effective use of math is needed for code design, data structures utilization, using design patterns, developing artificial intelligence (AI), using scripting engines, controlling 3D pipelines and texture mapping development. Math is also needed to implement the physics utilized in Newton's laws and concepts of collisions and reactions. Programmed applications which use math and physics in game development will form the foundation for this hands on course. (Prerequisites: AG 101; **and** MT 124 **or** MT 133 with grades of "C" or higher; **or** with permission of instructor. Alternatively students may have completed or may take concurrently a higher level math course, including: MT 135, MT 205, MT 206, or MT 210, and have successfully completed AG 101.)

### **AG 121 Data Structures with C++ 2-3-3**

Introduces programming abstract data types and how they are designed. There will be an emphasis on effective design using C++ Object Oriented Programming (OOP) including encapsulation, inheritance and polymorphism. Students will use the Standard Template Library (STL) as well as their own classes to code these data types in functioning programs to understand how to effectively organize information. Structures examined will include stacks, queues, linked lists, dictionaries, maps, binary trees and hash tables. The effective use of C++ topics such as pointers, operator overloading, recursion, sorting and templates will be covered. An introduction to algorithm analysis and asymptotic (Big O) notation will be covered. The concepts of multithreaded programming will be explored. File parsing using XML will be introduced. (Prerequisite: CP 107 or with permission of Program Coordinator for AGGP)

### **AG 131 Introduction to 2-D and 3-D Game Development 2-3-3**

This course focuses on the fundamental aspects of programming, development, and design for games using 2-D gameplay. Other topics explored include an introduction to 3-D programming, single-system multiplayer programming, multi-platform programming, and support for data originating from level editors. The coursework is structured with several hands on projects, classroom presentations, a team project, and a final public presentation. (Prerequisites: AG 101, AG 103, and CP 107, or with permission of Program Coordinator for AGGP)

### **AG 225 3-D Game Engine Application Development 2-3-3**

Students in this course will use a commercially available game engine or framework. The majority of the work in the class will be hands-on using these technologies. A common practice within the industry is team development of applications using licensed game engine technology. Students will understand how to use the engine's interwoven mesh of different systems, which include from user input, networking and rendering. Game modification, also known as "Modding", and source control will be covered. (Prerequisites: AG 110, AG 121, AG 131 and AG 235 or with permission of Program Coordinator for AGGP)

### **AG 235 Digital Art Modeling and Animation 2-3-3**

This course is an introduction to modeling and animation for game programmers to provide a common understanding to work with artists and designers in an effective manner. Topics include modeling, material creation, basic lighting, and an introduction to skeletal animation. Models will be created and then used to understand animation and asset pipelines using current industry tools and engines. Course topics are applied through practical hands on assignments. (Prerequisite: AG 103 or permission of Program Coordinator for AGGP)

### **AG 255 Application Development and Software Prototyping 2-3-3**

Current application development can target multiple platforms across a range of devices such as phones, tablets, smart devices, consoles, and personal computers. Students will study current technologies for cross platform development and deployment. Several intense hands-on software prototype projects will be required where students will design a concept, build a proof of concept, and conduct a postmortem review. (Prerequisites: AG 110, AG 121, AG 131 and AG 235, or with permission of Program Coordinator for AGGP)

### **AG 270 Emerging Game Technologies 2-3-3**

The field of game development is rapidly evolving. Changes driven by emerging technologies include new devices, new platforms, evolving software tools, and enhanced content delivery. The means to assimilate new technology in the workplace and the impact on business models will be explored. Several intense, hands-on projects will be assigned. (Co/Prerequisite: CP 252; Prerequisites: AG 110, AG 121, and CP 240 or with permission of Program Coordinator for AGGP)

### **AG 291 Project Definition and Portfolio Specifications 1-3-2**

Leaving NHTI with a polished, professional portfolio is one of the most important program benefits for an AGGP graduate. With these portfolios our students find themselves in better positions to compete in the hiring process, to transfer to other schools, and to receive scholarships for further education. In AG 291, students begin the construction of a professional industry portfolio. Assignments given to support an effective portfolio include collecting and polishing potential portfolio pieces, crafting resumes and cover letters, and learning job search networking techniques. An exemplary individual project intended to be included in a portfolio is required in addition to other assignments. A study of game theory and game projects will be used to define a team capstone project to be undertaken in AG294. (Prerequisites:

Completion of all AGGP major courses in the first year of the curriculum; Corequisites: additionally, the student must be enrolled or have already taken all AGGP major courses for the fall semester of the second year curriculum; or with permission of Program Coordinator for AGGP.) **Students enrolling in AG 291 come with the expectation that they will directly enroll in AG 294 in the next semester. Students who do not take AG 294 in the next semester after taking AG 291 must re-take AG 291 before enrolling in AG 294. Students who have passed AG 291 but who are required to re-take the course should be aware that the cost of the course may not be covered by financial aid and should consult with the Financial Aid Office prior to registration.**

### **AG 292 Portfolio Development 2-3-3**

Critical to breaking into the game industry is the development and refinement of an impressive portfolio showing both team and individual content. The portfolio is the means to display one's skills and ability to work within a team. Each portfolio is developed as an individual student effort. AG 292 builds upon the work already started in AG 291. The lab in this course is devoted to a major portfolio piece or for students to be available for an internship off-campus. Students are expected to prepare a presentation of their work as part of this course. (Prerequisites: AG 291 Project Definition. Summary of all prerequisites: completion of all major AG courses in the first year of the curriculum and all major AGGP courses in the second year fall semester and Corequisites: additionally the student must be enrolled in all the AGGP courses for the spring semester of the second year curriculum or have completed these courses; or with permission of Program Coordinator for AGGP)

### **AG 294 Animation and Graphic Game Programming Capstone Project 2-5-4**

Students will be working on campus in team projects or off-campus on internships. Students will be creating projects based on the specifications developed in AG 291. The lab portion of this class is devoted for student project development. All work, either on-campus or off-campus, will be supervised by an NHTI instructor and students are expected to work at an industry performance level. Final team presentations of the work accomplished are part of this course. (Prerequisites: AG 291 Project Definition completed during the previous semester. Summary of all prerequisites: completion of all major AG courses in the first year of the curriculum and all major AG courses in the second year fall semester; Corequisites: additionally, the student must be enrolled in all the AG courses for the spring semester of the second year curriculum or have completed these courses; or with permission of Program Coordinator for AGGP)

## **Anthropology**

### **AN 101 Introduction to Cultural Anthropology 3-0-3**

This course is an introduction to the perspectives, methods, and ideas of cultural anthropology and will analyze human diversity and similarities among people throughout the world, both western and non-western, through cross-cultural comparison. Topics include: culture and society; ethnographic research; ethnocentrism and cultural relativism; how societies adapt to their environment;

different forms of marriage and social relationships; male, female and other forms of gender; the social functions of religion; and the processes of social-cultural change.

### **AN 210 Native American Studies I 3-0-3**

A study of North American Indian cultures from the lithic period to the 21st century. Origin of Native American civilization and development will be studied, including: lifeways, religion, ceremonies, arts and social organizations. The course will first focus on Mesoamerica during the pre-Columbian period. The study then proceeds to an in-depth review of the people/tribes of the Northeastern and southeastern woodlands and the Great Plains cultural area.

## **Architectural Engineering Technology Architectural Focus**

### **AR 101 AutoCAD 2D 3-0-3**

This is an introductory course in Computer-Aided Drafting (CAD) for beginning students. Topics include drawing set-up, line drawing, text placement, orthographic drawing, basic editing, and dimensions. This hands-on course, using AutoCAD, focuses on the most common basic functions necessary to complete 2-D drawings including move, mirror, copy, offset, trace, OSNAP, distance, and more. Projects incorporate basic techniques of drawing and computer-aided drafting. This course is part of the CAD Certificate program. Note: Students are expected to be able to read and interpret architectural/engineering graphics to register for this course.

### **AR 102 AutoCAD 3D 3-0-3**

This course introduces students to architectural three-dimensional CAD applications, 3-D manipulation of entities and to create and control views in 3-D space through Isometric and perspective projections. Topics include three-dimensional drawing, coordinate systems, viewing, rendering, modeling, and output options. Upon completion, students should be able to prepare basic architectural three-dimensional drawings and renderings. This course is part of the CAD certificate program. (Prerequisite: AR 101 or permission of department head of Architectural Engineering Technology)

### **AR 103 Architectural Graphics and Sketching 2-2-3**

The first semester is devoted to the basic ways of representing architectural ideas graphically through the development of sketching and computer-aided-drawing (CAD) skills. Architectural line techniques, lettering styles, geometric construction, principles of projection and drawing expression are the areas of early concentration. Architectural design issues are studied regarding residential planning and siting. The student produces floor plans, foundation plans, site plans, elevations, building sections, wall sections and details. An introductory structural analysis for foundation loading is explored. Production of drawings by sketching and CAD demonstrates the student's ability to perform. (Corequisite: AR 120) Note: CAD certificate students taking this course will not be required to register for AR 120.

### **AR 104 Architectural Design Studio I 2-2-3**

The student will study the architectural design for an

institutional building that is designated for public use. The terrain is sloping and provides for a two-story sloped roof structure that employs current construction methods. The student begins study through the use of sketch-to-scale drawings. With an outline of design criteria and project guidelines, the student develops preliminary presentation drawings for floor plans, elevations and 3-dimensional views. As the student comes to know and appreciate the design, the emphasis shifts to a more in-depth understanding of the technology of construction. The student prepares construction documents for floor plans, elevations, building sections, wall sections and details. The preparation of preliminary drawings and construction documents include sketching to scale and drawings produced by CAD (Computer Aided Drafting & Design) AutoDesk software. The student demonstrates competency by studying, discussing and producing these drawings and presenting them to the class as a way of working on relevant verbal skills. (Prerequisites: AR 103 and AR 120)

#### **AR 120 Materials and Methods of Construction 4-0-4**

A survey of the materials used in building construction, the methods used in assembling these materials into structures, and the forces acting on structures. Included are the characteristics and properties of each material and their relative cost. Materials and methods studied include site work, concrete, masonry, metals, wood and plastics, thermal and moisture protection, doors and windows, and finishes.

#### **AR 150 Statics and Strength of Materials 3-2-4**

A study of forces and the effect of forces upon structural members in a state of equilibrium. It is the study of internal stresses and deformations that result when structural members are subjected to external forces through loading. While lectures, and some labs, deal mainly with the theory of force analysis and force systems solutions, laboratory projects involve the application of various stress and strain measuring instruments on many materials used in construction. (Prerequisites: MT 124 and PH 133)

#### **AR 160 Introduction to Geographic Information Systems 2-2-3**

An introduction to geographic information systems (GIC), global positioning systems (GPS), and ESRI's ArcGIS. Topics will include: basic GIS concepts; the structure and availability of GIS data in New Hampshire and beyond; the New Hampshire state GIS database (NH GRANT); creation of maps; editing and creation of GIS data; the use of GPS to collect information for use in GIS; GIS processing and analysis. The course will combine lectures, hands-on exercises, and an individual student project over the course of the semester. (Prerequisite: AR 101 with a grade of "C" or higher or permission of the Department Head of Architectural Engineering Technology)

#### **AR 191 AutoCAD Architecture 3-0-3**

This course is designed for architects and other building professionals. Participants begin with a conceptual massing model and work in 2D or 3D or both at the same time to create a design and draft construction documents. AutoCAD® Architecture is built on traditional drawing tools of AutoCAD allowing students to create a building model with parametric architectural objects that behave according to real-world

properties. Because all drawings derive from a single data set, they are perfectly coordinated and automatically updated throughout the entire design process. **Note:** students are expected to be able to read and interpret architectural/engineering graphics to register for this course.

#### **AR 192 Revit Architecture 3-0-3**

Revit® Architecture, a parametric building modeler based on parametric technology, enables the user to make a change anywhere in the building project and it's automatically updated everywhere else in the project. The course focuses on building a foundation for the basic elements in the software. **Note:** students are expected to be able to read and interpret architectural/engineering graphics to register for this course.

#### **AR 193 3D Viz 3-0-3**

This introductory course covers the concepts needed to work with 3D Studio Viz like the user interface, modeling concepts, scene creation, object creation, material creation, and mapping. After creating solid models, surfaces, lights, and materials, the focus will then be on rendered animations. Knowledge of 3D modeling concepts and familiarity with 2D AutoCAD is expected. (Prerequisites: AR 101 or permission of the department head of Architectural Engineering Technology)

#### **AR 194 Microstation 3-0-3**

This is an introductory course in Computer-Aided Drafting (CAD) for beginning students using Microstation V8 software. Topics include drawing set-up, line drawing, text placement, basic editing and dimensions. The course structure focuses on the most common basic functions necessary to complete drawings including move, mirror, copy, offset, distance and more. Projects incorporate basic techniques of drawing and computer-aiding drafting. **Note:** students are expected to be able to read and interpret architectural/engineering graphics to register for this course.

#### **AR 202 Architectural Design Studio II 2-2-3**

Emphasis is placed on an architectural design solution for a multi-story addition to existing buildings and preparation of construction documents for an institutional building. The student will study a multi-story steel or concrete framed and masonry enclosed structure. Floor plans, elevations, sections and details using materials typically used in construction today are sketched to scale and produced by CAD (Computer Aided Drafting & Design) AutoDesk software. Lectures relating to the basics of circulation, egress requirements, structural steel framing, masonry, codes, metal pan stairs, barrier-free design and handicap code requirements, fire protection, acoustics, glazing, curtain-wall systems, roofing and building energy conservation and sustainable strategies, supplement studio work. Students will study sustainable strategies and energy utilization through the use of energy modeling software. (Prerequisites: AR 103 and AR 104; corequisite: CV 240) **Note:** course not required of students in Architectural Engineering Technology - Civil Focus.

#### **AR 250 Environmental Systems 3-0-3**

A survey of the environmental control methods and support systems used in contemporary buildings. Emphasis is placed on the fundamentals of each system and design of simple

systems, and how they relate to energy utilization and conservation in building design. Students will use an energy modeling software to study the design of a building. Economic comparisons and cost/benefit ratios are also studied. (Prerequisite: PH 135) **Note:** course not required of students in Architectural Engineering Technology - Civil Focus.

### **AR 270 Construction Management 3-0-3**

A course dealing with the business phase of a construction project, from working drawings and specifications to final completion of the structure. Both the architect's or engineer's role and contractor's role in coordinating project activities are discussed. Also covered are cost control (estimating) and contractual arrangements, including recent innovations of the industry. The impacts of green, sustainability, and energy conservation issues on construction management will be studied. Guest lectures and a field trip to an ongoing construction project will supplement classroom lectures. (Prerequisite: AR 202 or CV 201 and EN 125)

### **AR 297 Architectural Design Studio III 2-2-3**

The student chooses a project for the term to design from a collection of instructor-approved projects requiring real site considerations. By discussing the relevant design criteria with the instructor and selection of a hypothetical client outside of class, the student develops and refines the program of space requirements and acquires an appreciation of the in-depth functionality of architecture, especially space adjacency requirements. The study includes an analysis of a site, structure, codes, circulation, material usage, and sustainability and energy considerations. Schematic and preliminary designs, with an emphasis on sketching for study purposes, presentations drawings and construction documents are produced by CAD (Computer Aided Drafting & Design) AutoDesk software. Students build a study and final model, and are required to submit a progress report. An emphasis is placed on a thorough coordination of the work, application of current technology and application of the knowledge gained in the AET program. (Prerequisites: AR 202, CV 220, CV 240 and EN 125)

## **Architectural Engineering Technology Civil Focus**

### **CV 191 AutoCAD Land Desktop 3-0-3**

This course is an introduction to the use of computer aided drawing and design software (CAD) for the civil engineering discipline. Areas of application of the software within engineering include the use of projects, Prototypes, Point Labeling, and Digital Terrain Modeling. A basic introduction to the elements of roadway design will also be covered, including horizontal and vertical alignments, profiles and cross sections. (Prerequisite: AR 101 or permission of department head of Architectural Engineering Technology)

### **CV 192 AutoCAD Civil 3D 3-0-3**

This course explores how AutoCAD® Civil 3D software works in concert with AutoCAD Land Desktop software. The specific areas covered in this class include an in-depth coverage of

the roadway design and site grading tools as well as the tools available to automate the drafting of pipe runs. The access to centralized project data through AutoCAD® Land Desktop enables students to effectively utilize the civil engineering add-on for generating drawings for a project. (Prerequisite: CV 191 or permission of department head of Architectural Engineering Technology)

### **CV 193 AutoCAD Map 3D 3-0-3**

This course introduces students to AutoCAD® Map 3D software. It offers a varied range of functionality, including powerful drawing management tools, drawing clean-up capabilities, topology creation and analysis, and GIS linking of drawing objects to internal or external databases. It also provides an interface to field surveying instruments through which field work is downloaded to produce point, symbols and linework in an AutoCAD® drawing environment. (Prerequisite: CV 192 or permission of department head of Architectural Engineering Technology)

### **CV 201 Civil CAD 2-2-3**

This course is an introduction to the use of computer aided drawing and design software for the civil engineering discipline. Areas of application of the software within engineering include mapping, topography, site development, and subdivision. Within the field of highway design the student applies civil design software to detail roadway alignment and create final drawings of plan, profile and cross section. Laboratory time is typically for the student to generate designs and drawings with the support of the instructor. (Prerequisites: AR 104, or permission of department head of Architectural Engineering Technology)

### **CV 202 Soil Mechanics and Foundation Design 2-2-3**

This course deals with the fundamentals of soil mechanics. Topics covered include moisture-density relations, mechanical and chemical gradation properties, basic shear strength theory, permeability and compression. Lecture topics will be supplemented by field observations and lab work. Upon completion of this course, students will understand the essential elements of soil mechanics theory such that it may parlay into practical applications. (Prerequisites: AR 150 and CV 220 or permission of the department head)

### **CV 220 Surveying 2-3-3**

A course to familiarize students with the equipment, procedures, and methodology of modern surveying practice. Includes measurement of distance, elevation, angle, and direction "in the field" with both manual and electronic equipment. The methods of topographic, construction, and route surveying are also studied. Lastly, the student is taught to use software programs to aid in data collection, manipulation and map making. (Prerequisite: MT 124)

### **CV 235 Reinforced Concrete Design 2-3-3**

To learn the fundamentals of design and analysis of steel reinforced concrete structures including beams, floor and roof slab systems, columns, foundation footings, and structural walls. Design sketches, based on calculations and in accordance with the latest American Concrete Institute (ACI) Building Code Requirements, are prepared. Also a major laboratory project including designing, building and

testing reinforced concrete beam is done by student teams. (Prerequisite: CV 240)

#### **CV 240 Timber and Steel Design 3-2-4**

The study of structural steel and timber members that involves the design and analysis of beams with regard to bending, shear, and deflection. Columns are studied with respect to axial and eccentric loading. Miscellaneous structural elements such as beam bearing plates, column base plates, and welded and bolted connections are also designed. The student is taught first to make calculations manually, then with the aid of computer software. The laboratory time ( 2 hours per week ) is dedicated to a variety of activities where the student is fully involved not only in the design and analysis, but also in the construction and testing of timber and steel beams, columns, connections, bracing systems, load packages and simple frames. Finally, the observations and results are documented through calculations, drawings, photos and CAD. (Prerequisite: AR 120 and AR 150)

#### **CV 245 Hydrology/Drainage Design 3-0-3**

This is an entry-level course that will teach students the basics of stormwater drainage. They will learn how to delineate a watershed, apply runoff calculations to the watershed, and determine peak design flows. These design flows will then be used to instruct students in the basics of hydraulics as it pertains to stormwater flow. They will learn how storm drainage systems are planned and what components make up a drainage system. They will leave the course understanding stormwater flow in culverts, how to determine if a culvert is flowing with inlet or outlet control, and how to use nomographs in the selection of a particular culvert. Students will apply this knowledge to basic open channel flow and learn about erosion and sediment control. (Prerequisite: CV 220 with a grade of "C" or higher)

#### **CV 297 Highway Design 3-2-4**

This course focuses on the highway design process, beginning with transportation requirements and soil mechanics and continuing with highway location, site planning, geometric design and pavement design. The knowledge gained equips students for project work. The course culminates with students' preparation (using CAD) and presentation of final engineering drawings of a section of roadway. This project is evaluated with respect to alignment, safety, aesthetic impact, construction cost and professional quality. Labs will involve the use of a soil testing lab and visits to nearby road construction sites will be scheduled. (Prerequisite: CV 220)

## **Biology**

#### **BI 100 Introduction to Biology with Laboratory 3-2-4**

An introductory course in biology intended to satisfy the biology admission requirement for NHTI health-related degree and professional certificate programs. Topics include scientific method and measurement, cell structure and function, energy transformation, nutrient processing, gas exchange, circulatory systems, nervous systems, principles of homeostasis, and heredity. Laboratory exercises parallel lecture topics, and include microscopy, dissection,

biochemistry, and physiological experimentation. (For institutional credit only; does not count toward graduation requirements but is calculated into GPA; not intended for transfer)

#### **BI 108 Integrated Biology I 3-0-3**

This is the first part of a two-semester sequence (Spring/summer) intended for students in the Practical Nursing program. This introductory course will cover the essentials of human anatomy and physiology and microbiology. Topics include all the major systems of the body, negative feedback control of homeostasis, acid/base balance, and fluids and electrolytes. Microbiology topics include principles of classification, morphology, cytology, physiology, and nutrition, as well as health-related effects of control measures, of major groups of microorganisms. (Students must complete BI 108 with a grade of "C" or higher to progress to BI 109.)

#### **BI 109 Integrated Biology II 2-0-2**

BI 109 is a continuation of BI 108, picking up where BI 108 leaves off in the discussion of the essentials of human anatomy and physiology and microbiology. (Prerequisite: completion of BI 108 with a grade of "C" or higher)

#### **BI 111 General Biology I 3-2-4**

Designed to provide the student with the basic principles of biology, including scientific method, cell structure, cellular biochemistry and energy transformations, and genetics. Laboratories are used to develop skills in scientific thought and common procedures used in biological experimentation. With BI 112, intended to provide a foundation for further study in life sciences. (Prerequisites: algebra I with a grade of "C" or higher; high school level biology and chemistry, with labs, with grades of "C" or higher)

#### **BI 112 General Biology II 3-2-4**

A continuation of BI 111. Includes a survey of the taxonomic groupings of life forms, as well as the principles of evolution and ecology. (Prerequisites: BI 111 with a grade of "C" or higher or permission of the Department Head of Natural Sciences)

#### **BI 115 Introduction to Ecology 3-2-4**

This course is designed to give non-science majors an opportunity to learn about the interactions between the physical and biological components of the environment. The lecture will provide a broad introduction to the organismal, population, community and ecosystem levels of ecological interaction. Instructional methods include readings, lecture/discussion, in-class applications, field observations and field research. The lab portion of this course will provide students with practical experience in ecological methods and in the design, conduct and analysis of ecological studies. Laboratory exercises are designed to correspond with major lecture topics. Exercises include laboratory and field studies; student should come prepared to be outside for most labs. (Prerequisites: high school biology with lab or BI 100 with a grade of "C" or higher and high school chemistry with lab or CH 100 with a grade of "C" or higher and high school algebra I or MT 093 and MT 094 with grades of "C" or higher)

**BI 116 Field Ornithology 3-2-4**

This course introduces the student to the biology of birds and the methods of modern field studies, identification, life histories, ecology, and behavior of birds, with an emphasis on local species. The course involves a major field component (i.e., observing and identifying birds in their natural habitats or "birding") complemented by investigations into aspects of bird biology and ecology, such as habitat use, bird morphology and flight, song, nesting and reproductive behavior, and migration. No previous experience with birds is expected. Lecture and lab may include demonstrations, discussion, and field trips. (High school biology strongly recommended or permission of the Department Head of Natural Sciences)

**BI 117 Introduction to Plant Biology 3-2-4**

An introduction to the structure and physiology of plants at the molecular, cellular and organismal levels; survey of major plant groups and their evolutionary relationships; and the relationships of plants to humans and other organisms. (Prerequisite: high school level biology with lab with a grade of "C" or higher or NHTI's BI 100 with a grade of "C" or higher)

**BI 120 Human Biology 3-2-4**

A brief summary of human anatomical structure and physiological systems designed to provide students with the knowledge and perspective necessary to work in their chosen fields. (Prerequisite: high school biology recommended)

**BI 122 Basic Pathophysiology 3-0-3**

A course designed to provide the student with an understanding of the various mechanisms by which human diseases develop. Includes a survey of common disorders involving each of the major body systems. (Prerequisite: BI 120 with a grade of "C" or higher; or BI 195 and 196 with grades of "C" or higher)

**BI 123 The Biology of Human Reproduction 3-0-3**

This is an introductory course intended to give an appreciation for the importance of the following areas of reproduction: male and female anatomy and development, sexual differentiation, puberty, menstruation, parturition, lactation, assisted reproductive technologies, birth control methods, and menopause. (Recommended: high school level [or higher] biology)

**BI 125 Human Genetics and Society 3-2-4**

This course is an introduction to genetics for students not majoring in the sciences. The student will be introduced to the basic principles of Mendelian and molecular genetics and will apply these principles to human genetic traits. Causes and treatments of common inherited diseases will be discussed as well as genetic technologies and their applications (recombinant DNA technology, genetic engineering, in vitro fertilization). The associated ethical and social issues will also be examined. Lab component to complement lecture. (Recommended: high school level [or higher] biology)

**BI 129 Introduction to Sports Nutrition 3-0-3**

This course is an introduction to the basic nutritional needs of those involved in individual and team sports. General nutrition topics will be interspersed with specific

requirements and recommended intakes for athletes at all levels and ages. A variety of sporting activities, including those involving both endurance and strength athletes, will be covered. (High school biology recommended.)

**BI 159 Personal Nutrition 3-2-4**

An introductory course including laboratory for the individual interested in nutrition as a tool for personal health promotion and disease prevention. Incorporates basic principles of nutrition with discussions of contemporary issues. Laboratory exercises allow for exploration of lecture topics and will include scientific method, food analysis, diet analysis and nutritional lifestyle analysis. (Prerequisite: high school biology recommended)

**BI 180 Tropical Ecology and Conservation 3-2-4**

This introductory level course is designed to introduce the student, through academic study and real experience, to the ecology, natural history, and conservation programs at work in Costa Rica. The classroom (on-line) portion of the course will prepare the student through studies of major ecological principles, tropical ecology in general and of Costa Rica specifically, and the major ecosystems of Costa Rica. The historical, economic, and cultural aspects of Costa Rica and their relationship to resource conservation efforts will be examined. The culmination of the course will be a nine-day travel experience to Costa Rica, where the class will visit several major ecological systems and conservation areas. The laboratory portion of the course will consist of the nine-day excursion to Costa Rica through the NHTI-sponsored Culture Quest trip. The travel portion of this course is a major part of the laboratory component and is required. During the time in Costa Rica, students will apply what they have learned to understand the different ecosystems visited, identify tropical plants and animals, and appreciate the threats to and efforts to conserve the unique biodiversity of Costa Rica. (Prerequisite: High school biology with lab with a grade of "C" or higher and high school chemistry with lab with a grade of "C" or higher.) [Students should note that the cost of the trip to Costa Rica is not included in the tuition for this course. Students are responsible for all costs of this trip.]

**BI 195 Anatomy and Physiology I 3-2-4**

An introduction to the structure and function of the human body. Includes elementary cytophysiology, histology, and anatomy and physiology of the integumentary system, skeletal system, muscular system, nervous system, and special senses. Laboratory work parallels lecture topics, and includes microscopy, study of human anatomical models, dissection of preserved animals, and physiological experimentation. (Prerequisite: high school biology with lab and high school chemistry with lab, each with a grade of "C" or higher, or permission of the Department Head of Natural Sciences)

**BI 196 Anatomy and Physiology II 3-2-4**

A continuation of BI 195. Includes anatomy and physiology of the endocrine system, circulatory system, immune system, respiratory system, digestive system, excretory system, and reproductive system. Other topics covered include nutrition and metabolism, acid/base balance, fluid and electrolyte balance, and genetics. Laboratory work parallels lecture topics, and include microscopy, study of human anatomical models, dissection of preserved animals, and physiological

experimentation. (Prerequisite: BI 195 with a grade of "C" or higher or permission of Department Head of Natural Sciences)

#### **BI 202 Microbiology 3-3-4**

Lectures focus on three major areas: 1) basic concepts of microbiology, including morphology and physiology of prokaryotes, eukaryotes, and viruses; 2) host resistance to disease and immunology; and 3) epidemiology of selected diseases caused by bacteria, viruses, fungi, protozoa, and parasitic worms. Labs also focus on three major areas: 1) basic skills such as staining, microscopy, and isolation techniques; 2) bacterial physiology as is pertinent to identification of bacterial species; and 3) control of microorganisms via chemotherapeutic agents, physical means and chemical disinfectants. (Prerequisite: BI 112 or BI 196 with a grade of "C" or higher)

#### **BI 211 Genetics 3-2-4**

A lab course intended to enhance a student's knowledge of basic genetics and to provide the foundation necessary for further studies in molecular biology, cell biology, evolution, systematics, and behavior. Topics covered will include Mendelian genetics, molecular genetics, immunogenetics, genetics of cancer and population genetics. (Prerequisites: BI 112 or BI 196 with a grade of "C" or higher, and MT 124 or equivalent or higher level math course\* with a grade of "C" or higher; or permission of Department Head of Natural Sciences) \*excluding MT 129

#### **BI 212 Ecology 3-2-4**

Investigations into the biological and physical factors affecting the distribution, abundance, and adaptations of organisms. Interrelationships at the population, community, and ecosystem levels will be studied. (Prerequisites: BI 112 and MT 124 or equivalent or higher level math course\* with grades of "C" or higher; MT 251 with a grade of "C" or higher recommended; or permission of Department Head of Natural Sciences) \*excluding MT 129

#### **BI 215 Freshwater Ecology 3-2-4**

This course enhances students' understanding of ecology, and introduces them to the biological, chemical, and physical properties of lakes, streams, and wetlands as they relate to the structure and function of freshwater ecosystems. Students will gain an understanding of freshwater environmental concerns and experience in water quality assessment. The course will also cover topics in sustainability, management, and rehabilitation of natural aquatic environments in relation to human impact. (Prerequisite: BI 111 or BI 112 or BI 115 with a grade of "C" or higher)

#### **BI 222 Pathophysiology 3-0-3**

A course that provides the allied health student with an understanding of disease processes by building on the student's knowledge of normal anatomy and physiology. Common disorders of major body systems are discussed relative to the mechanisms by which they develop and their effects on homeostasis. (Prerequisite: BI 196 with a grade of "C" or higher or permission of Department Head of Natural Sciences)

#### **BI 229 Nutrition in Exercise and Sports 3-0-3**

This course introduces the student to nutrition as it relates to the improvement or optimization of physical performance. Dietary interventions for strength and endurance exercise training and sporting event participation will be thoroughly investigated. Special emphasis will be placed on weight management; the reduction, maintenance and gain of body mass. (Prerequisites: BI 196 with a grade of "C" or higher, or BI 159 or equivalent with a grade of "C" or higher)

#### **BI 235 Principles of Evolution 3-0-3**

This course provides an in-depth understanding of the mechanisms of genetic variation, natural and sexual selection, and patterns of evolutionary change, and will look at modern variations within the theory itself. The course also explores the historical development of the science and the modern social controversies associated with it. Pedagogical issues of teaching evolution may also be discussed. (Prerequisites: BI 112 General Biology II or equivalent with a grade of "C" or higher, or permission of the Department Head of Natural Sciences)

#### **BI 259 Normal and Therapeutic Nutrition 4-0-4**

An introductory course in normal and therapeutic nutrition designed for students in allied health programs. Focuses on the application of basic principles of nutrition to health promotion and disease prevention, as well as the role of nutritional intervention as a therapeutic tool in specific pathologies. Includes discussion of contemporary issues in nutrition. Special note – it is recommended that students NOT take BI159 prior to taking this course. (Prerequisites: BI 196 or equivalent with a grade of "C" or higher or permission of Department Head of Natural Sciences.)

#### **BI 260 Cell Biology 3-3-4**

Cell Biology is a course for biology majors focusing on eukaryotic cells. General topics include the structure and function of principal cellular components, energy metabolism, signal transduction, apoptosis, the cell cycle, gene expression, and an introduction to cancer biology. Laboratory experiments include modern cell research techniques such as ELISA, gel electrophoresis, and animal cell culture. (Prerequisites: BI 112 General Biology II or BI 196 Anatomy & Physiology II or equivalents with grades of "C" or higher, or permission of the Department Head of Natural Sciences)

#### **BI 279 Life Cycle Nutrition 3-0-3**

Focuses on nutritional needs of the growing, developing human from conception to old age, with particular emphasis on the nutritional needs of infants, children, adolescents, adults, women and aging adults. (Prerequisite: BI 159 or BI 259 with a grade of "C" or higher or permission of Department Head of Natural Sciences.)

#### **BI 290 Biology Senior Project/Internship 0-12-4**

This course serves as the capstone course for the Biology Program. During this course the student will demonstrate the application of the knowledge gained throughout the program. This will be achieved either by independent study on a topic chosen by the student with guidance from a faculty member or through participation in a field internship with an approved industry partner. Independent study will involve the investigation of all sides of a current biological issue. In

either case, the student will turn in a written paper and also make a presentation of his/her project to all interested students and faculty in a student seminar. (**Prerequisites:** All science and MT courses with grades of "C" or higher and the approval of the Department Head of Natural Sciences; only offered in the final semester of the Biology program.)

## Business Administration

### **BU 101 Introduction to Business 3-0-3**

An introduction to the general concepts of business, including organization, forms of ownership, finance, management, marketing, production and the relationship between business and society. The current business climate and attitudes will also be examined through the use of business publications and articles.

### **BU 120 Principles of Banking 3-0-3**

A descriptive course presenting the fundamentals of banking functions. Topics include banks and the monetary system, negotiable instruments, the relationship of the commercial bank to its depositors, types of bank accounts, the deposit function, the payments function, bank loans and investments, other banking services, bank accounting and marketing, external and internal controls, and the public service obligations of banks.

### **BU 121 Money and Banking 3-0-3**

This course presents the practical application of the economics of money and banking to the individual bank. Coverage is given to the structure of the commercial banking system, the nature and functions of money, banks and the money supply, cash assets and liquidity management, bank investments, loans, earnings, and capital, the Federal Reserve System and its policies and operations, Treasury Department operations and the changing national monetary system.

### **BU 152 Foundations of Leadership 3-0-3**

In this course, students will examine the outlook, skills, and behavior essential to successful leadership. Topics include leadership theory, motivation, group dynamics, communication, management, status, power and politics, as well as organization culture and ethics. Students will develop an approach to the leadership style that works for them while at the same time exploring techniques to develop leadership skills in others. The focus of the course is to bridge the distance between leadership theory and management practice.

### **BU 170 Principles of Marketing 3-0-3**

An introductory course presenting such topics as the seven managerial functions of marketing, problem-solving, decision-making, marketing research, ethics in marketing, new product development, price determination, marketing channels and advertising.

### **BU 174 Principles of Sales 3-0-3**

A study of the selling process as it relates to training professional sales people and the basic elements of the persuasion process. A systematic approach will be used to

develop techniques to adjust to individual styles. Students will also study the tasks of the sales manager and techniques which are used to hire, train, and compensate the sales force. (Prerequisite: BU 170)

### **BU 180 Principles of Retailing 3-0-3**

This course provides the basis for understanding the world of retailing. Topics include retail strategy, store location, buying merchandise, assortment planning, inventory management, retailing, customer service and store layout. (Prerequisite: BU 170)

### **BU 221 Health Care Management in the U.S. 3-0-3**

This course will examine health care trends within the United States. The focus will be on the evolving nature of health care and current debates. Students will explore such topics as: history of health care, hospital reorganization, care delivery settings, administrative and caregiver role changes, reimbursement, managed care and governmental interventions.

### **BU 225 Business Law I 3-0-3**

Law I is the study of the fundamental principles of law as they apply in the business world. The course examines legal rights and remedies and contracts. Students will gain a detailed understanding of the law of Torts and Contracts, and will learn business law through related textbook readings and research on the Internet. This course emphasizes the relationship of business law to an individual's personal life as well as occupational life. Applications of the laws as they affect the individual in a moral society are featured.

### **BU 226 Business Law II 3-0-3**

Focuses on various forms of legal entities and Articles 2 and 9 of the UCC. The major laws governing securities, entities, antitrust, bankruptcy, and environmental issues are reviewed. Special emphasis is given to the legal liability of the professional. This course is designed for the future business manager, entrepreneur, or professional who wishes to have information regarding laws governing business. (Prerequisite: BU 225)

### **BU 240 Small Business Management 3-0-3**

This course is designed for the student who is primarily interested in the ownership and management of the small business enterprise. It examines and analyzes the managerial functions of planning, organizing, staffing, direction, and controlling as applied to the small business. Students also study retailing, wholesaling, manufacturing, and service type business organizations. (Prerequisite: AC 101 or BU 101)

### **BU 242 Business Ethics 3-0-3**

An introductory study of classical and contemporary ethical philosophies and how these philosophies apply to current business practices. The course stresses analytical and problem solving skills to comprehend the ethical dimensions of business relationships: employer and employee; managers to owners; manufacturers to consumers; and corporations to the environment. **This course does not meet the requirement for PI 242 Ethics or any other humanities elective.** (Prerequisite: BU 101)



**BU 245 Organizational Behavior 3-0-3**

This course helps students to develop a more complete understanding of the distinctively human dimensions of management. Emphasis is placed upon the allocation of theory to real world problems as well as the development of interpersonal skills. Topics include such issues as motivation, leadership, group dynamics, and interpersonal communication. (Prerequisite: BU 152 or BU 270)

**BU 250 Principles of Finance 3-0-3**

A study of the planning and control involved in financial statement analysis, working capital management, cash budgets, cash flows, and break-even analysis within a corporate environment. (Prerequisite: AC 102)

**BU 255 Personal Financial Planning 3-0-3**

Provides an effective learning experience in personal finance. Emphasis is on helping students make sound financial decisions in the areas of budgeting, insurance, taxes, credit, investment, real estate, and retirement planning. (Prerequisite: AC 101 or BU 101)

**BU 257 Investments 3-0-3**

This course introduces students to the world of investments, including various types of investment vehicles, techniques, and strategies. Students will study the investment environment, role and scope of investments, risk and return, and types of investment markets and transactions. Traditional short- and long-term investment instruments will be analyzed; higher-risk, more complex investments will also be reviewed. (Prerequisite: AC 102; BU 250 strongly recommended)

**BU 262 Consumer Behavior 3-0-3**

In this course, students concentrate on the ultimate or final user, examining anticipatory and consummatory, rational and emotional, instinctive and collectivist behavioral variables in the light of conceptual contributions from economics, psychology, sociology, and anthropology. (Prerequisite: BU 170)

**BU 270 Principles of Management 4-0-4**

The course provides an understanding and appreciation of organizational structures and the role of the manager within these structures, with emphasis on the influence of the social sciences upon current management theory. (BU 152 recommended prior to taking BU 270)

**BU 273 Human Resource Management 3-0-3**

A study of human resource management including the evolution of the personnel process, organizational models, leadership patterns, and issues touching upon planning, assessment, staffing, training, development, and environmental issues. Emphasis is placed on the application of theory and practice so that students will gain a useful understanding of human resource management whether they seek careers in that field or in other disciplines. (Prerequisite: BU 152 or BU 270)

**BU 275 Labor-Management Relations 3-0-3**

The development of unions, collective bargaining, labor legislation, the main issues confronting labor and

management (e.g. OSHA, pension plans, rights of public employees and productivity) constitutes the initial part of the course. The practical aspects of the course are covered through an intensive study of the negotiation, grievance procedure, arbitration, conflict resolution and behavioral aspects of union and management. The course includes cases in which students must prepare and, where possible, role play collective bargaining and union-management positions. (Prerequisite: BU 273 strongly recommended)

**BU 278 International Business 3-0-3**

This course provides an overview of international business: organizational, social, cultural, and economic variables that create change in the international marketplace. Includes exchange rates, resource allocation, import quotas and export controls, balance of payments, and free trade versus protectionism. (Prerequisites: BU 101)

**BU 290 Management Internship 0-9-3**

Students in this course engage in individually supervised employment within an area of management requiring applications of management theory and principles to the work environment. Students must work at least ten hours per week on the job, meet periodically with a supervising faculty member, research related literature in the employment field, and prepare a substantive report on the work experience and the studies involved. This course is limited to seniors and requires the approval of a supervising faculty member and the Department Head. (Prerequisite: 2.8 G.P.A. and approval of department head of Business Administration)

**BU 293 Managerial Decision-Making 2-2-3**

This course is designed to be a capstone course for Business Administration students to enhance and practice their critical thinking and management skills. Students will be expected to use their previously acquired expertise (in, e.g., marketing, supervision, accounting and management) and apply that to case studies and computer simulations of companies, both individually and in teams. The course will be conducted through student presentations and execution of a multi-year computer-based simulation. (Prerequisites: AC 101, BU 101, BU 170 and BU 152 or BU 270)

**BU 295 Marketing Internship 0-9-3**

In this supervised internship, students apply the principles of marketing in a position requiring at least ten hours per week. This course requires a written report and is open to seniors. Students must have the approval of the supervising faculty member and the Department Head. (Prerequisites: 2.8 G.P.A. and approval of department head of Business Administration)

## Chemistry

**CH 100 Introductory Chemistry 3-2-4**

An introductory course in chemistry intended to satisfy the chemistry admission requirement for NHTI health-related degree and certificate programs. Consideration will be given to fundamental atomic theory, chemical arithmetic, kinetic theory, solution chemistry, acids, bases and salts, and introductory organic chemistry. Lab included. (Proficiency

with the mathematical operations of high school algebra I or MT 093 strongly recommended) (For institutional credit only; does not count toward graduation requirements but is calculated into GPA; not intended for transfer)

#### **CH 103 General Chemistry I 3-2-4**

Fundamental laws and concepts of chemistry, including elements, atomic structure, the periodic table, chemical bonding, compounds, chemical equations, and stoichiometry. Laboratories are used to reinforce concepts presented in lectures and to develop skills in scientific thought and common procedures used in chemical experimentation. With CH 104, intended to provide a foundation for further study in life sciences and physical sciences. (Prerequisites: high school chemistry with lab with a grade of "C" or higher, algebra with a grade of "C" or higher, and ability to use exponents and logarithms)

#### **CH 104 General Chemistry II 3-2-4**

A continuation of CH 103. Topics include gases and gas laws, solutions, acid-base chemistry, oxidation-reduction reactions, chemical equilibrium and thermodynamics. Also includes an introduction to organic chemistry and biochemistry. Laboratories are used to reinforce concepts presented in lectures and to develop skills in scientific thought and common procedures used in chemical experimentation. (Prerequisite: CH 103 with a grade of "C" or higher, or permission of Department Head of Natural Sciences)

#### **CH 105 Chemistry 3-2-4**

This is an introductory and cursory course in which the fundamental principles of chemistry are developed. Included are topics in atomic structure, chemical bonding, electronic configuration and the Periodic Table, stoichiometry, solutions, gases, and acid-base chemistry. Appropriate laboratory experiments will complement the lectures. This course is not meant as a substitute for either CH 103 or CH 104. (Prerequisite: Algebra I with a grade of "C" or higher; High school chemistry recommended.)

#### **CH 110 Introduction to Biochemistry 3-2-4**

A course designed to provide allied health students with the basic principles of the chemistry of living processes. Includes the study of macromolecules, metabolic pathways, energy transformations, and enzyme action. (Prerequisite: high school chemistry with lab or permission of Department Head of Natural Sciences)

#### **CH 120 Introduction to Forensic Science 3-2-4**

An overview of the multidisciplinary field of the forensic sciences. This course combines classroom lecture and laboratory analysis of samples from hypothetical criminal investigations to demonstrate the role of science and the forensic scientist in the criminal justice system. (Prerequisite: high school chemistry with lab with a grade of "C" or higher, or permission of Department Head of Natural Sciences)

#### **CH 205 Organic Chemistry 3-3-4**

An introduction to the nomenclature, structure, and reactions of organic compounds. Lab. (Prerequisites: CH 104,

or CH 105 or equivalent with a grade of "C" or higher, or permission of Department Head of Natural Sciences)

## **Community Social Service**

#### **CS 111 Introduction to Community Social Services 3-0-3**

Provides an introduction to the history of care provided to people with a variety of disabilities and challenges. Presents and describes the principles of community integration and social role valorization, discusses client rights, quality of life, guardianship, and emerging issues in community social services. Presents a model for evaluating the quality of community social services.

#### **CS 112 Supportive Communication Skills 4-0-4**

A study of the knowledge, skill, and personal characteristics that are needed in today's professional world of helping careers will be examined. Students will learn the purpose and skill of interpersonal communication techniques through various didactic and experiential methods. Coverage will include documentation, verbal and nonverbal communication, along with time management, self management, and successful work practices. Dynamics of human behavior, culture, and specific needs seen in the workplace will be explored.

#### **CS 115 Learning and Behavior 3-0-3**

This course discusses the history and principles of behaviorism and presents a learning theory and teaching techniques based on positive behavioral principles. Presentation and discussion focus on the ethical and client rights issues of positive behavior change, and recent trends and techniques for applying learning principles in a variety of settings. (Prerequisite: CS 111 and PY 105)

#### **CS 116 Assessment and Individual Planning 3-0-3**

This course reviews the process for designing and implementing support for human service consumers. Presentation and discussion will include current and evolving models for assessment and planning, as well as the factors that influence achievement of individual plans. (Prerequisites: CS 111, CS 115, PY 105, PY 110)

#### **CS 117 Community Social Service Practicum 2-8-4**

This course is designed to provide initial experience with human services programs, agencies, and their customers. The student will develop professionally and will survey human services agencies and programs. The course will focus on issues of professionalism, ethics, the development of interviewing skills, and the analysis of case studies. Students will be expected to become familiar with a variety of agencies or programs. Guest speakers, consumers, and others may be invited to introduce students to their particular area of human services. A total of 125 hours will be spent in the field to meet the course requirement. (Prerequisites: CS 111, CS 112, CS 115, CS 116)

## Computer Aided Design

These are individual courses and are not part of any program.

### CD 101 CAD I 1-3-2

Basic Training in the use of Computer Aided Drawing (CAD) including entity creation, editing, dimensioning, file management, and plotting. A "hands on" approach will be taken while using PC based AutoCAD software. Applications will be taken from a variety of disciplines. **This course does not meet requirements for the MET/MFT programs.**

### CD 102 CAD II 1-3-2

A continuation of CD 101 into more advanced concepts in Computer Aided Drawing. Topics include wire frame, surface and solid modeling as well as techniques to improve productivity. **This course does not meet requirements for MET/MFT programs.** (Prerequisite: CD 101)

### CD 103 CAD III 1-3-2

This course is a continuation CD 101 and CD 102. Emphasis is placed on 3-D parametric solid modeling using Autodesk Mechanical Desktop. Student will develop skills and utilize techniques to produce geometric profiles that serve as a database for the production of 3-D models, working drawings, bill of materials and exploded views of assembled models. **This course does not meet requirements for MET/MFT programs.** (Prerequisites: CD 101 and CD102)

## Computer Engineering Technology

Students must earn a grade of "C-" or higher in each CP and EL course listed as a prerequisite to a subsequent CP course.

### CP 107 Introduction to Programming with C++ 2-3-3

Introduces the student to program design using the language C++. No prior knowledge of programming is assumed. Focuses on effective structured design of code with variables, decisions, loops, functions, arrays and introduction of pointers. Use of professional programming design approaches and coding style will be used in laboratory assignments. Completion of this course provides the programming design skills to continue on with the study of the language C++ or other computer languages.

### CP 125 Data Structures 2-3-3

This course introduces students to abstract data types, object oriented programming, and algorithm analysis. Students will use procedural and object oriented techniques to program stacks, queues, linked lists, hash tables, and binary trees. Asymptotic (Big O) notation will be used to analyze data structures and sorting algorithms. The effective use of C++ topics such as pointers, operator overloading, and templates will be covered. Students will write programs in C++ and Java. (Prerequisites: CP 107 or permission of the Department Head of Computer Engineering Technology)

### CP 215 Integrated Circuits and Interfacing 3-3-4

For CPET and other NON-EET majors, this course supplements

EL 115 (Digital Fundamentals) with basic linear and interface electronics. Topics covered include simple power supplies, op-amps, stepper motors, A/D & D/A conversion, and interfacing a computer bus. Advanced digital topics such as synchronous logic, programmable logic devices and Digital Signal Processing will also be covered. The labs demonstrate real world implementation of otherwise abstract academic concepts. Fluency with the use of test equipment and debugging skills will also be stressed in the laboratory environment. (Prerequisites: CP107, EL 101, and EL 115; or permission of department head of Computer Engineering Technology. Strongly recommend having previously taken or to be concurrently taking EL 144.)

### CP 222 Data Communications and Internetworking 3-3-4

This course provides the student knowledge and skills in a wide range of topics covering data communications, packet transmission and the Internet. Data communications subtopics include transmission media, serial communications, error detection & correction schemes, data security and signal processing required for long distance communications. Packet transmission subtopics include local area networks, hardware addressing, LAN building blocks, and wide area networks. Internetworking subtopics include TCP/IP communication stack, ISO 7-layer communication stack, network addressing, Internet protocol (IP), address resolution protocol (ARP), Internet control message protocol (ICMP), IP routing protocols, transport control protocol (TCP), user datagram protocol (UDP), and client-server API. (Prerequisites: CP 107 and CP 235; corequisites: CP 240, CP 252 recommended; or permission of department head of Computer Engineering Technology)

### CP 235 Algorithms With Object Oriented Programming 3-3-4

This course focuses on the development, implementation and analysis of algorithms developed with object oriented design. Object oriented programming (OOP) techniques will be used to solve algorithms such as stacks, queues and linked lists. Concepts such as priority ranked data and object containers as well as circular queues will be covered. Sorting, data manipulation and retrieval will be covered. Languages which support OOP will be used as the learning method. Both C++ and Java will be used. This course covers intermediate and advanced topics with extensive hands on programming. Key OOP foundation capabilities of data abstractions, inheritance and polymorphism will be covered. Topics in C++ specifically covered will be pointers, operator overloading and multiple inheritance. (Prerequisite: CP 107; or permission of department head of Computer Engineering Technology)

### CP 240 Programming for Windows Operating Systems 3-3-4

The Microsoft Windows API and Microsoft.Net Framework will be covered from Windows Applications to full utilization of the Internet. Microsoft Visual Studio.Net with its intergraded development environment will be studied and utilized. Topics include Windows services, DLLs, accessing databases using ADO.NET, programming for the internet using ASP.NET, .NET assemblies, and advanced features of programming languages used to access the Widows API and .NET platform. Experience will be gained using extensive hands-on laboratory assignments. (Prerequisites: CP 107 and CP 235 or AG 121 or permission of department head of Computer Engineering Technology based on having

introductory programming skills with languages such as Java, C++ or classic Visual Basic)

#### **CP 252 Networking and Internet Technologies 3-3-4**

This course provides the student knowledge and skills in a diverse range of topics including structured query language (SQL), client-server programming, selected internet applications and LAMP (Linux, Apache, MySQL and PHP). SQL subtopics include relational database concepts, the SQL language and relational database design. Client server programming is studied in C++ using socket APIs and Java using socket classes. Selected internet applications include domain name system (DNS), hyper-text transfer protocol (HTTP) and file transfer protocol (FTP). LAMP topics include a Linux overview, Apache web server configuration, dynamic web pages using PHP and MySQL relational database. Each student is also required to define, implement, demonstrate and present a networking project during the last several weeks of the course. (Prerequisites: CP 107 and CP 235 or AG 121 or permission of department head of Computer Engineering Technology)

#### **CP 260 Computer Real Time Interfacing 3-3-4**

Interfacing computers to the outside world is the focus of this course. Computers are commonly used to gather data and to control processes in medical equipment, research projects and manufacturing. The course content focuses on practical real time (fast response) and multithreaded programming techniques used in interfacing with computer inputs and outputs. The course is divided into two major parts. First, a programmable logic controller industrial computer using the language relay ladder logic (Boolean algebra based) is used to teach the fundamentals of real time control. The second part covers multithreading programming techniques and issues including resource sharing, deadlock, critical sections, mutexes, and events. A final project is presented to the class. (Prerequisite: CP 107; corequisite: CP 235; or permission of department head of Computer Engineering Technology based on introductory knowledge of C++ or Java)

#### **CP 301 Computer Project Definition 1-0-1**

Students will elect this course as a first phase to Computer Project CP 303. During this course a student selects a project which is either provided by an industrial sponsor or chosen by the student. The selections are made with the guidance and approval of the instructor. The student will meet with the sponsor to initiate the project and then will write a specification to define the project. (Prerequisite: CP 107, EL 101, EL 115, CP 125, and Corequisites: CP 240, CP 260; or permission of department head of Computer Engineering Technology)

#### **CP 303 Computer Project 1-4-3**

The student will complete the project defined in CP 301 while maintaining logbook documentation, providing the advisor with progress reports. In addition, a formal oral presentation describing the project and a demonstration is required. (Prerequisites: CP 301, CP 240, CP 260, EL 144 and Corequisites: CP 222, and CP 252; or permission of department head of Computer Engineering Technology.)

## **Criminal Justice**

#### **CJ 101 Introduction to Criminal Justice 3-0-3**

This course presents the history, development and current status of the criminal justice system in the United States, and the challenges it faces. When appropriate, the opportunity is taken to visit relevant agencies.

#### **CJ 121 Criminal Procedure 4-0-4**

This course analyzes the constitutional issues in the United States which have direct bearing on the role and policies of criminal justice agencies. Application of these issues as they relate to investigation, arrest, pre-trial and appeal will be emphasized. The course is a combination of the case law and lecture method.

#### **CJ 123 Criminal Law 4-0-4**

This course combines an examination of the historical origins and development of criminal law as a form of social control. It will include the general principles of constitutional and statutory factors as they pertain to criminal liability, defenses to criminal charges and sentences. The final emphasis is placed on the substantive aspect of criminal law and how it differs from civil law.

#### **CJ 150 Criminology 3-0-3**

This course is a detailed analysis of the development of criminological theory, embracing the contributing disciplines of biology, psychology, sociology, political science and integrated theory combining those disciplines. Attention is also paid to the offender/victim relationship.

#### **CJ 205 Police Administration and Operations 3-0-3**

This course covers the principles of police organization, administration, along with community policing, as well as the selection, training, promotion and socialization of officers. It deals with the conflicting roles that the police and individual officers face in today's society as part of the justice system. It also examines issues involving the influence of research, police deviance, minorities, the use of force, and the general hazards of police work.

#### **CJ 210 Juvenile Justice Administration 3-0-3**

Theories, causation and prevention programs are studied. Rehabilitative theories and treatment programs of public institutions and public and private agencies are included. Case studies are made available to the student for analysis. Adolescent behavior, peer pressure, and the role of the family will be examined.

#### **CJ 215 Corrections Operations 3-0-3**

This course is a study of correctional processes and services, standards, personnel and principles of management; allocation of resources, training and staffing; the role of sentencing and work release programs; special programs and the use of outside contracts.

#### **CJ 225 Drug Abuse and the Law 3-0-3**

In the first part of this course, the historical use of the major drug groups (including alcohol) will be reviewed. In the second part, the reaction of the criminal justice system to

illegal involvement with drugs and alcohol and methods of treating substance abusers will be reviewed.

### **CJ 230 Justice and the Community 3-0-3**

This course deals with the interaction of the various components of the justice system with the community. It involves an analysis of the way the work of police departments, courts, correctional institutions and community corrections agencies appear to the public. The image of the justice system in the media is examined: specific attention is paid to the issues of the young, minorities and community organizations.

### **CJ 270 Internship 0-9-3**

The internship offers the student the opportunity to put learned theory to practical application. The student is responsible for seeking out the agency placement, with the assistance of the course instructor. The internship requires the completion of a mandatory minimum number of hours. A log is kept, and the final grade is based on a combination of the log, supervising agency assessment, and final analytical report.

### **CJ 275 Senior Project 3-0-3**

In this course, through on-going and individualized contact with the supervising instructor, the student develops a topic pre-approved through a prospectus presented to the instructor. The student may develop any topic raised in any major class and is not limited by category. Empirical studies, surveys, literature reviews are among the acceptable categories of research. The final grade is determined by a review of the final product and the extent to which the student has followed the course guidelines.

### **HSCT 101 Introduction to Homeland Security (3-0-3)**

This course will introduce students to the study of the agencies necessary for the protection of the United States and the relationships among them. It will examine the individual and cooperative roles of federal, state, and local law enforcement agencies, as well as the roles of private security agencies and first responders, in implementing the Homeland Security Act. (Open to current TSA Employees only.)

### **HSCT 105 Intelligence Analysis and Security Management 3-0-3**

This course provides an overview of national intelligence community operations and the collection and analysis of information. Students will see how the resulting intelligence products help provide a common operating picture for security management at all levels of government. Students will develop an understanding of the methods for collection and analysis of data to develop intelligence products to support both tactical operations and strategic planning for Homeland Security leaders. (Open to current TSA Employees only.)

### **HSCT 110 Transportation and Border Security 3-0-3**

This course provides an overview of modern border and transportation security challenges, as well as different methods employed to address these challenges. This course covers a time period from post-September 11, 2001, to the present. The course explores topics associated with border

security and security for transportation infrastructure, to include: seaports, ships, aircraft, airports, trains, train stations, trucks, highways, bridges, rail lines, pipelines, and buses. The course will include an exploration of technological solutions employed to enhance security of borders and transportation systems. Students will be required to discuss the legal, economic, political, and cultural concerns and impacts associated with transportation and border security. The course provides students with a knowledge level understanding of the variety of challenges inherent in transportation and border security. (Open to current TSA employees only.)

## **Design Visualization**

### **DV 191 Autodesk 3DS Max - Level 1 3-0-3**

This course is an introduction to AutoDesk® 3DS Max, a powerful software for 3D modeling, rendering and animation. Students learn the basics of 3-D computer modeling and rendering techniques; course topics include shape creation, lofting, material editing, morphing, scaling, light and camera placement, file importing, and rendering. (Prerequisite: working knowledge of AutoCAD® or permission of department head of Architectural Engineering Technology)

### **DV 192 Autodesk 3DS Max - Level 2 3-0-3**

AutoDesk® 3DS Max - Level 2 is an advanced level course which prepares students to develop complex shapes, experiment with the vast capabilities of material editor and generate animations of their models. Students are introduced to a variety of different 3D components, which lead them to a representation project until it includes flat and smoothed forms, light sources, texture maps and the production of animations. In addition, students learn about rendering options and techniques from flat shading to raytracing and radiosity. (Prerequisites: DV 191 or permission of department head of Architectural Engineering Technology)

## **Diagnostic Medical Sonography**

### **DS 201 Principles of Sonography 3-2-4**

An introduction to principles of ultrasound with emphasis on physical principles, instrumentation and terminology. Laboratory sessions will offer "hands-on" learning techniques.

### **DS 221 Sonographic Physics 3-0-3**

Study of the physical principles involved in ultrasound and state-of-the-art equipment technology. (Prerequisite: DS 201)

### **DS 233 Seminars in Sonography 4-0-4**

Sessions will be used for case presentations by students and preparation for registry exams. (Prerequisites: DS 297 and DS 241)

### **DS 241 Principles of Vascular Ultrasound 3-2-4**

Study of physical and doppler principles utilized in the ultrasound study of vascular structures. Laboratory sessions will introduce students to scanning techniques used in vascular studies. (Prerequisites: DS 201 and DS 221)

**DS 265 Sonographic Anatomy and Pathology I 3-0-3**

Study of gross, sagittal and cross sectional anatomy of the abdomen and the pathological changes and disease processes which are found in ultrasound examination of the abdominal region.

**DS 266 Sonographic Anatomy and Pathology II 3-0-3**

A continuation of Sonographic Anatomy and Pathology I with an introduction of small parts anatomy and an in-depth study of pathologic changes and disease processes found in relation to these structures. (Prerequisites: DS 201 and DS 265)

**DS 275 Sonographic Principles of OB/GYN I 3-0-3**

In depth study of the anatomy of female reproductive organs and associated pathological changes with introduction to first trimester fetal development.

**DS 277 Sonographic Principles of OB/GYN II 3-0-3**

A continuation of Sonographic OB/GYN I, with emphasis on the continuing process of fetal development and associated pathologic conditions. (Prerequisites: DS 201 and DS 275)

**DS 295 DMS Clinic I 0-16-4**

Two days per week of observation and direct clinical experience at selected clinical sites designed to familiarize students with working procedures in an ultrasound lab. Basic examination techniques will be performed. The first four weeks will be spent in the campus lab.

**DS 296 DMS Clinic II 0-24-6**

Three days per week of clinical experience at selected clinical sites. Students will gain continued scanning experience. (Prerequisites: DS 201, DS 265, DS 275 and DS 295)

**DS 297 DMS Clinic III 0-21-5**

Four 8-hour days per week at selected clinical sites for a 10 week period with emphasis on expanded roles in the ultrasound studies. Students will develop intermediate level skills and recognition of pathology will be stressed. (Prerequisites: DS 221, DS 266, DS 276 and DS 296)

**DS 298 DMS Clinic IV 0-32-8**

Four days per week of final experience to strengthen scanning and interpretation skills in preparation for challenging registry exams and entry into the sonography field. (Prerequisites: DS 241 and DS 297)

## Early Childhood Education

**EC 100 Growth and Development of the Young Child Extended Part I 2-0-2**

This course enables interested students to begin their studies in the field of early childhood education by integrating the first third of the course content of EC 101 with the development of the organizational and academic skills necessary for successful participation in NHTI's Early Childhood Education associate degree program.

**EC 101 Growth and Development of the Young Child 3-0-3**

Major theories and research findings in the physical,

cognitive, language and social/emotional domains of development of young children from conception through age 8 will be the focus of this course. The work of Piaget (constructivism), Erikson (psychosocial theory), and Maslow (hierarchy of needs) will be emphasized. Students will use various tools to observe and record the development of young children in early care settings as they explore domains and theories. Emphasis will be placed on understanding children's development in the moment and the power of observations.

**EC 101X Growth and Development of the Young Child Extended Part II 2-0-2**

A continuation of EC 100 that presents the final two-thirds of the course content of EC 101 Students must receive a grade of "C" or higher to continue further in the ECE program. (Prerequisite: EC 100 with a grade of "C" or higher)

**EC 141 Curriculum and Environments 1 3-0-3**

With emergent curriculum as the overarching approach to curriculum development, students will experience designing, implementing, and evaluating appropriate activities and environments for children birth through age six with a focus on music, movement, art, manipulatives and dramatic play supported by emergent literacy and anti-bias curriculum. Emphasis will be on concrete, practical application of various philosophies, theories, and current research in early childhood education. Methods of observing children's behavior and progress, and developing and using suitable instructional and play materials from these observations in all aspects of the daily routine will be emphasized. Participants will experience and broaden their own creativity and imagination through exploring learning activities that can be applied to actual early childhood settings. Students will learn how to plan stimulating, age-appropriate classroom and outdoor learning environments that encourage child-initiated discovery and act as a tool in behavior management. These environments will be child and family friendly, barrier free, inclusionary, and meet state regulatory requirements.

**EC 142 Curriculum and Environments 2 (SRV) 3-0-3**

Continuing to use emergent curriculum as the overarching approach to curriculum development, this course will focus on designing, implementing, and evaluating appropriate activities and environments for children through age six with a focus on blocks, math, science, woodworking, and technology with literacy concepts integrated into each area. Emphasis will be on the concrete, practical application of different philosophies, theories, and current research that is manifested in various curriculum models in early childhood education. Students will dialogue and reflect together as they explore the cycle of inquiry and project work for developing, implementing and assessing curriculum. Emphasis will be on planning stimulating, age-appropriate classroom and outdoor learning environments that encourage child-initiated discovery and act as a tool in behavior management. These environments will be child and family friendly, barrier free, inclusionary, and meet state regulatory requirements. Students will learn about and apply successful attributes of documentation panels that make children's learning visible.

**Service Learning is a component of this course.** (Prerequisite: EC 141)

**EC 155 Using Children's Literature to Support Young Children's Language and Literacy Development (SRV) 3-0-3**

High quality children's books will be used as a vehicle for supporting and applying current research on the acquisition of language and reading. This course will provide an overview of exemplary authors and illustrators of children's literature from birth to age 8. Students will become familiar with Caldecott Award-winning books and the artistic techniques used to create these books. Big books will be introduced as a way of distinguishing features of print. Poetry, multicultural books, and bibliotherapy as applied to early childhood education will be studied. Students will learn how to use children's literature to highlight the literacy elements of characterization, plot, setting, and theme. They will learn how to teach domains of language (phonology, semantics, syntax, morphology, and pragmatics) through shared storybook reading. Additionally, students will explore the teacher's role in promoting family literacy and participate in service learning on this topic. **Service Learning is a component of this course.**

**EC 167 Positive Behavior Guidance and Supporting Young Children with Challenging Behaviors 4-0-4**

Through exploring various theories of behavior management and functions of behavior, the role of positive behavioral supports in preparing young children to become competent and cooperative individuals with a strong social and emotional foundation will be emphasized. Developmentally appropriate methods of guiding individual and group needs will be shared as approaches to preventing disruptive behaviors in the classroom. Techniques for dealing with more challenging and explosive behaviors using functional assessment, identifying replacement skills, and creating and implementing behavior intervention plans will be utilized. Partnering with families in developing these plans will be emphasized. Students will also learn about triggers of and interventions for the cycle of tantrums, meltdowns, and rage often experienced by children with autism spectrum disorder. Students will leave the course with tools for primary, secondary, and tertiary prevention of challenging behaviors. They will understand when and how to reach out for support in the community in dealing with issues beyond their expertise. Students will be able to use the class as a model for developing parent education programs for the families that they serve. (Prerequisite: EC 101 or permission of the Department Head of Child and Family Studies)

**EC 188 Health, Safety and Nutrition in Early Childhood Education (SRV) 3-0-3**

This course offers an introduction to major issues affecting the health and safety of young children in early childhood settings. Nutrition and policy considerations about pediatric medications, infectious disease control, sick child care, universal precautions and liability, and health record keeping will be discussed. Childhood stress and education for the prevention of child sexual abuse will be highlighted. Students will learn how to integrate curriculum for young children related to health, safety, and nutrition into the overall program. **Service Learning is a component of this course.**

**EC 215 Infant/Toddler Development and Programming 4-0-4**

This course will be a study of important influences on infant and toddler development supported by research on brain development during the first three years of life. Emphasis will

be put on the role and responsibilities of families, child care teachers, and specialists in creating high quality supportive environments. Sensitivity to attachment and the importance of observation and communication skills to nurture positive family, caregiver, and child relationships through the roles of primary caregiving, transitions, and continuity of care will be highlighted as students learn to design responsive programs for infants and toddlers and their families. Field work in an infant or toddler classroom is required as part of this class. (Prerequisite: EC 101 or permission of the Department Head of Child and Family Studies)

**EC 225 Autism Spectrum Disorder 4-0-4**

This course will examine the neurological underpinnings and behavioral characteristics of children from birth through age 8 with autism spectrum disorders. It will focus on an overview of the strengths and challenges of child-centered, developmental, research-based interventions to be used in natural environments. The centrality of the family will be emphasized. Students will shadow an interventionist working with a young child with autism for a minimum of 10 hours over the course of the semester. (Prerequisite: EC 101 or permission of the Department Head of Child and Family Studies)

**EC 242 Child, Family and Community (SRV) 3-0-3**

The course will provide an overview of families and family systems (including Bronfenbrenner's Bioecological Theory) with emphasis on developing effective models of teacher/program/family partnerships. Students will identify their own biases as a precursor to exploring issues of power and privilege in society. Cultural dilemmas and their impact on early care and education will be identified as students begin to evaluate their own cultural competence. Students will learn how to identify and strengthen protective factors that empower families and reduce the risk of child abuse. Students will research various crises encountered by families and identify an action plan to positively address the crisis. Community resources will be identified and involved. **Service Learning is a component of this course.** (Prerequisite: EC 101)

**EC 261 Family Child Care Business Management 3-0-3**

This course will review the fundamentals of sound business practices as they relate to the running of a successful Family Child Care business. Emphasis will be on designing of business plans, budgeting, insurance, effective business policies, contracts, pricing, marketing, customer relations, purchasing, financial, legal and licensing regulations and reports, small business management and related record keeping.

**EC 262 Organization and Management for the Practicing Professional 4-0-4**

A survey of organization and management of early childhood programs and/or child care centers for the practicing professional. Emphasis will be on learning how to plan, organize, manage and evaluate programs and facilities for children. Specific skills addressed are licensing procedures, hiring, motivating and evaluating staff and parent involvement. Financial record keeping to inform program management decisions will be based on an understanding of Excel computer program use. Leadership and visioning skills will also be taught and evidence of implementation will be

required. Students will be required to spend fifteen hours outside of class on a final project to be implemented in their professional work. This course will meet the requirements for Director Certification from the State of New Hampshire. It will also meet the criteria for accreditation by the National Association for the Education of Young Children. (Prerequisite: permission of Department Head of Child and Family Studies)

### **EC 270 Young Children with Autism and Exceptionalities (SRV) 3-0-3**

This course will broaden students' awareness of the theoretical and legal foundations for programs serving young children (infancy through age eight) with a wide range of special educational needs. Students will examine the causes, symptoms, social consequences and behavior characteristics of children with exceptionalities. Students will learn how to develop curriculum modification/accommodation strategies in all domains of development in an inclusive classroom setting or other natural environment. Emphasis will be on education for children and their families. Students will work with and observe a child and family to develop an understanding of their needs and develop a resource file of state, local and national supports. **Service Learning is a component of this course.** (Prerequisite: EC 101)

### **EC 272 Teaching Children with Low-incidence Disabilities 3-0-3**

This course will examine the causes, symptoms, social consequences, and behavior characteristics of children with low-incidence disabilities. Children with low-incidence disabilities include but are not limited to children with emotional disabilities, autism, multiple disabilities, traumatic or acquired brain injury, deafness, deaf-blindness, and blindness. The course will examine the specific characteristics of each disability and the influence of each disability on development, learning, behavior, and family systems. Through observation students will learn how to assess the skills of individual children to develop curriculum modifications which lead to educational interventions in natural environments. Students will increase their knowledge and skills related to assistive technology (AT) for low incidence disabilities. Strategies for using high and low tech AT devices will be included. Local, state, and national supports will be explored. **Service Learning is a component of this course.** (Prerequisite: EC 101)

### **EC 275 Practicum 1 - Observation, Interpretation, Assessment and Portfolio Documentation 2-5-3**

Students will work in NHTI-approved Early Childhood Education (ECE) settings for children in infant/toddler care, preschool, or kindergarten under the supervision of early childhood Cooperating Teachers. Students will conduct an in-depth child study over the course of the 75 hours that they will spend at their practicum site during the semester. They will become "students of childhood" as they learn how to interpret and assess their observations of children in the seminar class. Students will create and manage a portfolio for a child. They will use portfolio information to generate invitations to learning and implement child-centered curriculum. They will make children's learning visible through learning story documentations and incorporate their own wonderings as teachers. Their observations will be

summarized in narratives outlining the children's growth in the various developmental domains. All of this will be used to plan and carry out two parent conferences. Video-capturing of practicum students in the action of teaching will be required. NHTI ECE faculty schedule site visits to review and evaluate student progress during the practicum experience. Students must earn a grade of "C" or higher in Practicum 1 to move on to Practicum 2. (Prerequisites: all 100-level EC courses; a 2.5 minimum GPA in major field courses; permission of the ECE Practicum Coordinator; and submission of all required documents. EC 192 and EC 242 may be taken concurrently with Practicum 1.)

### **EC 276 Practicum 2 - Exploring Teaching: Implementing Responsive Emergent Curriculum (SRV) 2-10-5**

Students will work in NHTI-approved Early Childhood Education (ECE) settings for children in infant/toddler care, preschool, or kindergarten under the supervision of early childhood Cooperating Teachers. Weekly seminars conducted by NHTI faculty offer support for students as they explore the characteristics of responsive child-centered emergent curriculum projects. Students will document and reflect on their experiences with children, families, and professional partners through projects as they develop a project history book connecting theory to practice. Students will also be encouraged to develop and embrace the dispositions of wonder, disequilibrium, and reflective practice as they experience the role of "teacher as researcher" through the process of action research. The 150 hours they spend at their sites over the course of the semester will include lead teaching responsibilities and will require flexibility in scheduling to allow for two full days at the site. Video-captures of the practicum students in the action of teaching will be required. NHTI ECE faculty schedule site visits to review and evaluate student progress during their practicum experience. Students must earn a grade of "C" or higher in Practicum 2 in order to graduate from the Early Childhood Education program. **Service Learning is a component of this course.** (Prerequisites: all 100 level EC courses, EC 242, and EC 275; a 2.5 GPA in major field courses, permission of the ECE Practicum Coordinator and submission of all required documents.)

### **EC 282 Preschool Special Education Practicum 2-7-4**

Students will work in NHTI approved community based settings with preschool children with special needs under the supervision of Cooperating Teachers. Students will become "students of childhood" as they conduct in-depth observations of preschoolers with special needs using a variety of tools during the 105 hours they spend at their practicum site this semester. Students will create and manage portfolios for children and use this information to write progress notes and narrative summaries. They will participate in IEP meetings and suggest and implement appropriate activity based interventions that are part of a child's IEP. NHTI program faculty schedule site visits to review and evaluate student progress during the practicum experience. Students must earn a grade of "C" or higher in this practicum to graduate from the degree program. (Prerequisites: all first year courses, 2.5 GPA in major field courses, permission of the practicum coordinator, and submission of all required documents.)



### **ECE 283 Early Intervention Practicum 2-7-4**

This 105-hour field based experience provides students with a supervised opportunity to develop skills and demonstrate competencies necessary in early intervention in natural settings (child care, homes, public schools). Students will learn how to best support families and caregivers. Supervisors will provide guidance and support needed to enhance students' development as early intervention paraeducators. Students will use appropriate assistive technologies and learn how to create a supportive environment for children learning to use these technologies. Through participation in an IFSP or IEP team, students will learn how to partner with families in the education of their children. (Prerequisites: All other courses in either the Autism Early Intervention Support Certificate or first year courses in the Early Care and Education for Young Children with Disabilities Degree with a GPA of 2.5 or higher in major field courses; students must pass EC 283 with a grade of "C" or higher to graduate from the corresponding program.)

### **EC 288 The Early Childhood Professional (SRV) 3-0-3**

This course explores the role of the early childhood professional in the workplace. Topics to be discussed include leadership, working in a team, and professional ethics. Additionally, students will learn about the legislative process in NH and explore their role in advocating for public policy to support children, families, and early care and education programs. Students will develop a resume and create a Professional Portfolio that can be used for interview purposes, a NAEYC Standards Portfolio, and an e-portfolio. The Standards Portfolio will include competency statements with supportive artifacts using the NAEYC Standards for Early Childhood Professional Preparation for Associate Degree Programs. Emphasis will be placed on the role of ongoing professional development activities, and students will participate in an advocacy project. In lieu of textbook fees, students should plan on paying for, traveling to and attending the state AEYC conference on a Saturday in the spring.

#### **Service Learning is a component of this course.**

(Prerequisites: all 100 level EC courses, EC 242, EC 275; may be taken concurrently with EC 276 and EC 270.)

## **Economics**

### **EO 101 Macroeconomics 3-0-3**

This course is concerned with the behavior of the economy as a whole, particularly fluctuations in economic activities. Basic elements of economic reasoning are applied to the public policy issues of unemployment, inflation, and economic growth. A brief survey of the history of economic ideas is followed by a study of the consequences for national policy of the changing institutional structure of the U.S. economy, and of the conflicts inherent in, and generated by, competition and private enterprise. Analytic tools are used to evaluate monetary and fiscal policies and to understand current macroeconomic controversies.

### **EO 102 Microeconomics 3-0-3**

An investigation into the functioning and politics of the U.S. economy from the vantage of the marketplace, emphasizing microeconomics, wage bargaining, taxation and the distribution of wealth and income. Topics include the

theories of demand and production, and the determination of prices and quantities for commodities and factors of production in competitive and noncompetitive markets.

## **Education**

**TECP 70 - TECP 92 are professional preparation courses for Teacher Education Conversion Program (TECP) candidates only.**

### **ED 101/TECP 50 Introduction to Exceptionalities 3-0-3**

This course introduces the various exceptionalities and related topics in the field of special education including definitions, prevalence, assessment and intervention. It includes discussion of strategies for facilitating students' independence, learning, social connections and self-advocacy skills. Curriculum emphasizes the philosophical and practical applications of valuing students' abilities and diversity and collaborating with educators and families. It will explore curriculum modifications and accommodations, problem-solving strategies and transition issues. **10 hours of field work are required in this course. (TECP candidates have additional course requirements for the certification portfolio.)**

### **ED 104/TECP 51 Foundations of Education 3-0-3**

This course focuses on practical instructional strategies for designing developmentally appropriate and challenging learning experiences based on the unique needs of individual learners. Students use differentiated instruction and universal design for learning as frameworks for designing lessons that meet the needs of diverse learners. Methods for adapting instruction and supporting students through modifications, accommodations, and assistive technology are explored. Students will collect a repertoire of evidence-based strategies for identifying and addressing the reading, writing, math, and study skills of students with disabilities. Through field experience, students have the opportunity to observe in the classroom and gain practical experience planning, delivering, adapting, and reflecting upon a series of individualized lessons. 10 hours of field work are required. (Prerequisites: ED 101/TECP 51 and EN 101)

### **ED 106 Paraeducator Portfolio 1-6-3**

As a requirement of the No Child Left Behind legislation, paraeducators must complete a portfolio demonstrating knowledge and skills competencies in the areas of math, reading and writing, and the ability to assist in math, reading and writing instruction. This course guides students in the preparation and completion of the required portfolio through a series of workshops and assignments presented at individual school districts. Upon successful completion of the portfolio, students receive a letter of recognition from the State of New Hampshire Department of Education acknowledging they have achieved "highly qualified" status under No Child Left Behind.

### **ED 200/TECP 60 Supporting Students with Challenging Behaviors 3-0-3**

This course will focus on the knowledge and skills necessary for supporting students with challenging behaviors in various learning environments, using the framework of positive behavioral supports. Students will gain knowledge of the

basic assumptions about the context, function, and role of behavior. Students will learn to use a variety of positive behavior intervention techniques to control targeted behavior, support learning, and maintain the attention of students. (10 hours of field observation required.) **(TECP candidates have additional course requirements for the certification portfolio.)**

#### **ED 201/TECP 61 Legal Issues in Education 3-0-3**

Predicated upon legislative requirements such as the Individuals with Disabilities Education Act (IDEA), this course considers the theories and issues explored in ED 101, ED 207, ED 204 and ED 212 in the context of inclusive instructional settings. Students will develop an understanding of the various legal requirements as well as effective instructional strategies for curriculum adaptation and delivery within the context of Federal and NH State Special Education and Education laws and procedures. (Prerequisite: ED 207 or permission of department head of Education) **(TECP candidates have additional course requirements for the certification portfolio.)**

#### **ED 203/TECP 62 Teaching Strategies for Diverse Learners 3-0-3**

The focus of this course is on the development of typical speech and language skills and the effects of various disabilities on language development, including impaired speech, reading, language, and processing. The characteristics of children and youth with language disabilities are discussed. Strategies to assist students' functioning in school, at home and in the community are explored. Emphasis is placed on accommodating students versus "helping" students by completing work for them. A variety of practical techniques is studied and practiced through in and out of class exercises. Collaborative teaching is used by students to demonstrate their knowledge and skills. In addition, students learn a variety of study strategies, including mnemonics, double column notes, reading strategies, concepts of active versus passive learning, and organization and time management skills. Students are expected to work in small groups to develop strategies to teach these various skills to their peers in the class. In addition, students work a minimum of 20 hours in an approved field site. Students maintain a record of their field work. Innovation and creativity are critical for success in this course. (Prerequisites: ED 101 and EN 101; or permission of department head of Education) **(TECP candidates have additional course requirements for the certification portfolio.)**

#### **ED 204/TECP 63 Instructional Technology 3-0-3**

This course presents the theory and strategies for effective integration of technology resources and technology-based methods of instruction, and assistive technology designed for students with disabilities. A background of mediated instruction will be provided along with a review of the qualities and benefits of various technology options, including assistive technology, available to instructional settings. Opportunities to apply instructional delivery using common forms of media, multimedia, computers and specialized programs for students with disabilities will be integral to this course, in addition to contemplation of future issues of integration of technology and matters of time and place of the learning experience. (Prerequisite: ED 207 or permission

of department head of Education) **(TECP candidates have additional course requirements for the certification portfolio.)**

#### **ED 207/TECP 64 Teaching and Learning Process 3-0-3**

An applications-oriented version of the prerequisites, this course provides an examination of the various contemporary theories of teaching and learning. It will focus on developing an understanding of the learning needs and learning styles of students as individuals in the context of the learning environment. Attention will also be given to the assorted instructional modalities which may be employed and the issues involved in matching teaching methods to students' learning styles while considering the context and environment of the learning experience. (Prerequisites: ED 101 or ED 104) **(TECP candidates have additional course requirements for the certification portfolio.)**

#### **ED 208/TECP 68 Content Literacy 2-0-2**

This course focuses on methods for integrating explicit instruction of effective reading comprehension strategies into content area teaching. Before, during, and after reading strategies that will help students to comprehend challenging content area reading material will be introduced and practiced. Mentor texts will be used to demonstrate text structure and make the connection between reading and writing in the content areas. Students will learn strategies for motivating and engaging students with reading, modeling effective reading and writing strategies, guiding comprehension, facilitating metacognitive discussions, and teaching vocabulary and study skills. Methods for assessing and developing literacy skills associated with the Common Core State Standards will be discussed. Methods for differentiating and accommodating for struggling readers including the use of assistive technology will also be explored. (Prerequisites: ED 104/TECP 51)

#### **ED 209/TECP 66 Curriculum and Assessment 4-0-4**

This course focuses on designing appropriately challenging learning experiences based on curriculum standards and individual needs. Students will learn strategies for direct and indirect instruction, supporting self-directed and collaborative learning, and promoting critical thinking and problem solving through questioning. Classroom management strategies that promote student engagement and a positive learning climate will be explored. Students will learn how to select, design, conduct, interpret, and use the results of formative and summative assessments. Use of the common core state standards in the planning, instruction, and evaluation process will be examined. 10 hours of classroom observation are required. (Prerequisites: ED 104/TECP51 or ED101/TECP 50 or permission of the Department Head of Education)

#### **ED 210/TECP 69 Cross-Cultural Education: Professional Learning Community 1-0-1**

This course offers candidates a professional forum for researching, reviewing, and discussing socio-cultural contexts and topics in language teaching and education. In the course candidates will develop a broad-based understanding of cross-cultural education and discover appropriate practices and techniques for the multi-cultural classroom. The course is a requirement for all education and TECP candidates.

(Prerequisite: Permission of the Department Head of Education)

### **ED 211/TECP 67 Reading and Language Development 2-0-2**

This course focuses on assessing and addressing student literacy skills. Students will learn about the language development process and demonstrate their ability to use a variety of assessments to identify the language skills and needs of individual learners. Using data driven, collaborative decision making, students will plan appropriate interventions. Research based methods for teaching phonics, vocabulary, spelling, fluency, reading comprehension, and writing will be explored. Students will learn how to guide readers and writers in developing effective strategies for reading, writing, speaking, and listening. Authentic, evidence-based, differentiated instruction linked to the common core standards will be emphasized. (Prerequisites: ED 104/TECP 51)

### **ED 212/TECP 65 Design of Instruction 3-0-3**

An introduction to the design and development of the content of learning experiences. Curriculum theory will be introduced, and an examination of the processes of curriculum development, use and evaluation will also be investigated. The broad questions, "What do students need to learn?", "How is the learning experience most effectively managed?" and "How do we know the desired outcome was attained?" will be addressed. (Prerequisite: ED 207 or permission of department head of Education) **(TECP candidates have additional course requirements for the certification portfolio.)**

### **ED 220 Field Experience in Education 1-6-3**

Practical experience in a learning environment. The student spends a minimum of 45 hours per semester in a supervised assigned learning environment and participates in a weekly seminar. In the instructional environment, students will work with individuals and groups, as well as develop and deliver an instructional unit. This is a concentration requirement for the Associate in Science in Education program. (Prerequisites: interview required and permission of Department Head of Education)

### **ED 222/TECP 87 Language, Reading, and Literacy in ESOL 3-0-3**

This course is designed to assist student educators in constructing a favorable learning environment for their English language learners with regard to reading and literacy in the content area. Appropriate literacy strategies, instruction and assessments will be evaluated, and various aspects of first and second language acquisition will be examined. All aspects of second language development will be considered such as phonemic awareness, vocabulary, fluency, comprehension, and writing. Approaches for assisting young and older learners with reading comprehension will be addressed, and students will learn to adjust language instruction to meet the developmental literacy needs of the language learners from various socio-cultural, educational, and linguistic backgrounds. Students will have weekly opportunities to work as one-on-one content tutors with English language learning needs 1) to develop an understanding of various language learning needs, and 2) to increase educator effectiveness in improving

student skills. Assessing and tracking English language learner progress will be explored. In additions, there will be a 20-hour services learning component wherein students will support ESOL learners and their community. This course is required for those in the TECP: ESOL certification programs. Others must have permission from the Director of TECP or the Director of Cross Cultural Education.

### **ED 223 Instructional Approaches in ESOL Tutoring 2-3-3**

This course focuses on the development of the knowledge and skills needed in tutoring ESOL (English for Speakers of other Languages) learners. The content of this course includes a variety of useful techniques in the field, including the strategies for tutoring learners in developing reading comprehension skills. Through interactive instruction, group discussions and practical activities, students will demonstrate a clear understanding of their role as educational supporters of ESOL teachers and language tutors in assisting ESOL learners with school work, cultural transition and social interaction. This course includes a minimum of 45 hours of practicum which provides the opportunity to apply the techniques learned in class. (Prerequisite: ED 101 or ED 104 and/or permission of the department head of Education)

### **ED 230 Essentials of Career and Technical Curriculum and Instruction 3-0-3**

This course will explore the history, philosophy, principles, organization, and operation of career and technical education in the United States. Students will develop a functional understanding of the role and responsibilities of a professional career and technical educator. This course will provide the participant with the foundation and skills needed to design, implement and manage a curriculum in career and technical education. Identification of resources and occupational analysis, derivation of content, formulation of objectives, defining measurable learning outcomes and the selection and development of activities and evaluation methods will be explored.

### **TECP 70 Special Education Assessment 3-0-3**

This course will prepare pre-service and in-service teachers to be able to assess the achievement of students with special needs. It examines various assessment strategies. It includes the examination of the NH state curriculum frameworks, NH Rules for students with disabilities, IDEA regulations, and informal and formal assessment methods. Students will apply the assessment techniques in a case study format. They will utilize the assessment results to implement successful teaching/learning strategies in education settings for students with disabilities. **This course addresses specific New Hampshire State Standards for certification in the area of general special education.** (Prerequisites: acceptance in the General Special Education Conversion program or approval from TECP director)

### **TECP 71 Consultation/Collaboration and Individual Education Plans (IEP) 3-0-3**

This course is an examination of the collaborative/consultative model in education and the skills necessary for that approach. It focuses on the state curriculum frameworks, the NH state Rules for students with disabilities, and federal (IDEIA) and local guidelines regarding the education of students with special needs. This course

includes examination of the concepts and skills necessary for IEP and Team development such as, the development of student profiles, goals, objectives, communication and collaboration skills, leadership skills, and knowledge of the theories of change. **This course addresses specific New Hampshire State Standards for certification in the area of general special education.** (Prerequisites: acceptance in the General Special Education Conversion program, ED 101, ED 200, ED 203 and/or approval from TECP director)

#### **TECP 80 Methods/Student Teaching for Middle/Secondary School Mathematics 2-30-12**

This course will prepare prospective teachers with the methods for teaching mathematics at the middle/secondary school level. Developmentally appropriate content, strategies, and methods of instruction will be discussed with emphasis on the implementation in student teaching placement. This course requires a full time placement in an educational setting appropriate for the intended certification area. Students work toward mastery of attitudes, techniques and professional practice for successful teaching. Supervision is provided by a college supervisor and a field-based professional. **This course addresses specific New Hampshire State Standards for certification in the following content areas: Mathematics 5-8 and Secondary Mathematics 7-12 and Professional Education Standards (NH Standard Ed 610).** (Prerequisite: permission from the TECP director)

#### **TECP 81 Methods/Student Teaching for Middle/Secondary School Science Teachers 2-30-12**

This course will prepare prospective teachers for teaching science at the middle/secondary school level. Developmentally appropriate content, strategies, and methods of instruction will be discussed with emphasis on the implementation in the student teaching placement. In addition to the seminar, this course requires a full time placement in an educational setting appropriate for the intended certification area. Students work toward mastery of attitudes, techniques and professional practices for successful teaching. Supervision is provided by a college supervisor and a field-based professional. **This course addresses specific New Hampshire State Standards for certification in the following content areas: Biology, Chemistry, General Science, Earth Science, Physical Science, Physics and Professional Education Standards (NH Standard Ed 610).** (Prerequisite: completion of previous coursework in TECP and permission from the TECP director)

#### **TECP 82 Methods and Practicum in General Special Education 2-15-7**

This course will prepare prospective teachers for teaching in general special education K-12. Developmentally appropriate content, strategies, and methods of instruction will be discussed with emphasis on the implementation in the student teaching placement. In addition to the seminar, this course requires a semester-long, placement in an educational setting appropriate for the intended general special education area. Students work toward mastery of attitudes, techniques and professional practices for successful teaching. A college supervisor and a field-based professional provide supervision. Students document a minimum of 300 hours of work in the schools, including referral, observations, teaching, assessment, remediation, aiding with transition

issues, IEP development and implementation, consultation, collaboration, and designing and implementing behavioral programs. Seminars meet weekly throughout the semester. This course addresses specific New Hampshire State Standards for certification in the area of general special education. (Prerequisites: acceptance in the General Special Education Conversion program, completion of previous general special education coursework, acceptance into student teaching, and approval from TECP director)

#### **TECP 83 Methods and Student Teaching in General Special Education 2-30-12**

This course will prepare prospective teachers for teaching in general special education K-12. Developmentally appropriate content, strategies, and methods of instruction will be discussed with emphasis on the implementation in the student teaching placement. In addition to the seminar, this course requires a full time semester-long, placement in an educational setting appropriate for the intended general special education area. Students work toward mastery of attitudes, techniques and professional practices for successful teaching. A college supervisor and a field-based professional provide supervision. Students document the hours of work in the schools, including referral, observations, teaching, assessment, remediation, aiding with transition issues, IEP development and implementation, consultation, collaboration, and designing and implementing behavioral programs. Seminars meet weekly throughout the semester. **This course addresses specific New Hampshire State Standards for certification in the area of general special education.** (Prerequisites: acceptance in the General Special Education Conversion program, completion of previous general special education coursework, acceptance into student teaching, and approval from TECP director)

#### **TECP 86/EN286 Introduction to Linguistics 3-0-3**

The course focuses on linguistics, the scientific study of language. We will explore the properties of language and the linguistic challenges faced by English language learners. The course will expand upon the subfields within the linguistics: phonetics and phonology, morphology and syntax, semantics and pragmatics. Concepts relevant to teaching English will be taught: pronunciation, grammar, and vocabulary. Language variation and written discourse will also be addressed as well as how to apply this knowledge to the English language classroom. Linguistic principles and features of both English and other languages will be examined to promote familiarity with the language experiences of English language learners. A native speaker of a world language will act as a "grammar text" as we decipher an unknown grammar in a field methods format. This course is required for those in the TECP: ESOL certification program. Others must have permission from the Director of TECP or the Director of Cross Cultural Education. (Prerequisites: EN 101, minimum of B average in EN 101.)

#### **TECP 88 Curriculum & Design and Assessment in ESOL 4-0-4**

This course presents theories, tools, and techniques, and materials in the development of curricula which address the language and content needs of English language learners. The methodology for teaching such learners will be covered as well as how to plan and implement an adapted or differentiated curriculum to meet student need. Strategies that promote student success such as scaffolding and that

create an effective learning environment for both the language and content classroom will be examined. Additionally, students will work with authentic formal and informal pre- and post-instructional assessments and will explore methods by which language proficiency, acculturation, and content may be measured. Student will create, judge, and adapt their own assessment tools as questions regarding standardized assessments will be raised. Is this assessment culturally sensitive? Is this assessment and authentic measurement of the language learners' progress? Is this assessment valid? Appropriate testing accommodations for English language learners will also be considered. The role the NH Department of Education plays in ensuring that schools maintain legal compliance and equitable, accessible education for English language learners will be discussed as well as the rights and responsibility of NHTI's ESOL programs under Title III funding and No Child Left Behind. The State's K-12 language placement screening, W-APT™, and its proficiency test, ACCESS for ELLS®, as well as how the ESOL teacher becomes a certified W-APT™ or ACCESS for ELLS® test administrator, will be outlined. The State's adoptions of WIDE® English Language Proficiency Standards and its curriculum will be explored. This course is required for those in the TECP: ESOL certification program. Others must have permission from the Director of TECP or the Director of Cross-cultural Education. This course requires 10 hours of field work.

#### **TECP 90 Supervised Student Teaching/Theory, Practice, and Methods/Materials in ESOL Education 2-30-12**

This is a semester long, field-based course designed to integrate and apply previous course work in ESOL certification. Students document their work in the schools, including planning, teaching and consultation and aiding with transition issues. Students assume the full range of teaching responsibilities while supervised in the field. Seminars meet weekly throughout the semester. This course also focuses on communicative interactions between and within different culture groups. We will explore issues related both to effective cross-cultural communication and to miscommunication. An examination of how one's own cultural values and norms affect and guide intercultural interactions will guide class discussions and projects. Concepts such as power distance, hierarchy, uncertainty avoidance, non-verbal communication, and other intercultural communicative features will be explored, and ethnocentrism, stereotyping, and other value-based judgments will be addressed. (Prerequisites: acceptance in the ESOL Conversion Program, completion of the previous ESOL coursework and department head approval. Candidates enrolling in this course hold a teaching certification)

#### **TECP 91 Practicum, Methods/Materials, and Culture in ESOL Education 2-15-7**

This is a semester long, field-based course designed to integrate and apply previous course work in ESOL certification. Students document their work in the school, including planning, teaching, and consultation and aiding with transition issues. Students assume the full range of teaching responsibilities while supervised in the field. Seminars meet weekly throughout the semester. Students document a minimum of 300 practicum hours. This course also focuses on communicative interactions between and within different

culture groups. We will explore issues related both to effective cross-cultural communication and to miscommunication. An examination of how one's own cultural values and norms affect and guide intercultural interactions will guide class discussions and projects. Concepts such as power distance, hierarchy, uncertainty avoidance, non-verbal communication, and other intercultural communicative features will be explored, and ethnocentrism, stereotyping, and other value-based judgments will be addressed. (Prerequisites: acceptance in the ESOL Conversion Program, completion of the previous ESOL coursework and department head approval. Candidates enrolling in this course hold a teaching certification.)

#### **TECP 92 The Teaching Portfolio 1-0-1**

This course is offered to continue to assist TECP candidates with their professional portfolio development. The portfolio is a program requirement for certification. In this course candidates will continue to add coursework and practicum (or student teaching) evidence and reflections to the portfolio. Candidates will prepare their portfolio for review before application for certification. All coursework and practicum and student teaching work is aligned to NH State Standards and TECP goals. Offered every semester. (Prerequisite: Permission of the Department Head of Education)

## **Electronic Engineering Technology**

**Students must earn a grade of "C-" or higher in each CP and EL course listed as a prerequisite to a subsequent CP course.**

#### **EL 101 Electric Circuits 3-3-4**

A beginning course in electricity, this course covers basic electric circuit theory, the nature of electricity, resistance, current and voltage. Detailed coverage of topics includes direct current, alternating current, Ohm's law, series circuits and parallel circuits as well as energy and power relationships. This course also covers DC circuit analysis techniques including mesh and nodal analysis, and network theorems such as Norton's, Thevenin's and maximum power transfer. The transient response of capacitors and inductors are discussed when a DC voltage is applied using the various circuit and analysis techniques. Additional topics include the discussion of alternating waveform characteristics and analysis of sinusoidal alternating waveforms. Laboratory experiments are designed to reinforce the classroom work. (Corequisite: MT 124; or permission of the Department Head of Electronic Engineering Technology. Strongly recommend having previously taken or to be concurrently taking EL 115.)

#### **EL 102 Circuit Analysis 3-3-4**

A continuation of Electric Circuits. This course covers AC circuit analysis techniques including mesh and nodal analysis, and network theorems such as Norton's, Thevenin's, and maximum power transfer. Treatment is given to circuits containing dependent and independent sources of voltage and current. Resonance and basic filters are covered in detail as well as magnetism. Additional topics covered, as time allows, are transformers and three-phase circuits. Laboratory experiments are designed to reinforce the classroom work. (Prerequisites: EL 101, EN 101, and MT 124; or permission of department head of Electronic Engineering Technology)

**EL 110 Electronics I 3-3-4**

This is a study of the physical behavior of electronic devices. Emphasis is on analysis and application of electronic circuits utilizing semiconductor diodes, operational amplifiers, and transistors. Topics covered include rectification, clipping and clamping circuits, regulated power supplies, basic op-amps, biasing of transistors, and simplified AC modeling of transistor circuits. Engineering Design Automation (EDA) tools are used to reinforce the theory through electronic analysis simulations. Laboratory experimentation reinforces classroom theory with practical work. (Prerequisites: EL 101)

**EL 115 Digital Fundamentals 2-3-3**

Open to all majors, this introductory digital course is designed for students with little or no electronics skills. Topics covered include basic logic gates, Base 2, 10, and 16 number systems, BCD, Gray and ASCII codes, Boolean algebra, Karnaugh maps, flip-flops, counters, programmable logic devices and other related digital devices. Hands-on laboratory experiments, which augment the learning process, are an integral part of this course. The labs demonstrate real world implementation of otherwise abstract academic concepts and provide valuable experience in breadboarding, testing and debugging circuits. (Prerequisite: Algebra I or permission of department head of Electronic Engineering Technology) (This course replaces PLTW 102.)

**EL 144 Embedded Microsystems 3-3-4**

Personal computers are used to host an integrated hardware/software development system for applications with embedded Microcontrollers. A system level approach to the specification, decomposition, hardware/software development, and system integration for the implementation of embedded systems is covered through lecture and laboratory experiments. Topics covered include microprocessor architecture, instruction sets, interfacing, and real-time programming techniques in assembly language. Laboratory exercises consist of system level development in serial and parallel data transfer, data acquisition, and analog input and output signal processing. (Prerequisites: CP 107, EL 101 and EL 115 or permission of department head of Electronic Engineering Technology)

**EL 210 Electronics II 3-3-4**

This course is a continuation of Electronics I covering more advanced electronics topics with a variety of applications. The non-ideal characteristics of op-amps and other electronic devices will be discussed with applications emphasizing offset, gain and linearity. Other topics may include but are not limited to: sensors, pulse width modulations, Bode plots, SCRs, TRIACs and optoelectronics. EDA tools are used to reinforce the theory with electronic analysis simulations. (Prerequisites: EL 110; corequisite: EL 102 or permission of the Department Head of Electronic Engineering Technology)

**EL 215 Advanced Digital Electronics 3-3-4**

Advanced topics in digital electronics are covered in this course. These topics include the internal structure of logic families, complex digital circuits, synchronous logic, A/D and D/A conversion, timing diagrams, computer bus systems, programmable logic devices (PLD), and complex circuit debugging. The topic of digital interfacing is also covered. This includes interfacing various logic families to each other as

well as interfacing logic to various I/O loads, such as inductive loads and 120VAC loads. (Prerequisites: CP 107, EL 110, EL 115, and EL 144; or permission of department head of Electronic Engineering Technology.)

**EL 251 Advanced Topics in Electronics 3-3-4**

This course introduces students to advanced applications in electronics. Topics covered include but are not limited to: an introduction to electronic communication theory including digital communications, fiber optics, programmable logic controllers and human-machine interface. Laboratory exercises are used to reinforce classroom theory. (Prerequisite: EL115, EL144, and EL 210; or permission of the Department Head of Electronic Engineering Technology)

**EL 305 Design Project Preparation 1-5-3**

This course contains the background material and preparation necessary for Senior Design Project (EL 306) and consists of three integrated learning objectives which are studied concurrently. Objective one will be to document, design and build a team project that will use a typical industry project management process to complete a project assigned by the instructor. Product design documents will be created to guide this objective. Objective two covers the mechanics of designing and fabricating printed circuit boards. This includes the use of Electronic Design Automation (EDA) tools. The tools used include, but are not limited to, schematic capture and printed circuit board layout. Printed circuit boards will be fabricated that encompass both traditional "through-hole" components and modern "surface-mount" technologies. An overview of current industry standards of workmanship and safety shall be included. In objective three, the student selects a Senior Project to be completed in EL306, obtains approval for that project and develops a detailed project definition. Much latitude is given in selecting a project. Projects may be undertaken individually or as teams. They may be internal or collaborative with industry. The project may involve developing a specific circuit or a more general exposure in an appropriate industrial environment. Ultimately, the project must meet the requirements outlined in EL 306 Senior Design Project and receive final approval from the instructor. Having received final approval, the definition will serve as a guideline for the next phase of the senior project. (Prerequisites: EL 102, EL 110, EL 115, and EN 125 or EN 120; Corequisite: EL144, and EL 210; or permission of the Department Head of Electronic Engineering Technology)

**EL 306 Senior Design Project 2-5-4**

This course is the culmination of two years of theoretical study in the electronics engineering field and is intended to exercise and enhance the student's practical competency in that field. Combined with its preparation course (EL 305) each student will be involved with design, development, implementation, and testing of a curriculum related design as required by Project Definition developed by the student in EL 305. An accurate record of time invested is to be kept, all work is to be documented in a logbook, and regular progress reports are to be submitted. As the project nears completion, a technical write-up will be required as well as a formal presentation of the project. (Prerequisite: EL 305, EL 144, EL 210; corequisites: EL 215; or permission of department head of Electronic Engineering Technology)

## English

### EN 100 Introductory English 4-0-4

This course prepares students for success in English Composition through active reading and critical thinking, practice with the stages of the writing process (including prewriting, drafting, organization, development, coherence and editing), and work with grammatical concepts that affect clarity and style. **The four institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** Students are expected to receive a grade of “C” or higher in EN 100 to advance to EN 101 English Composition.

### EN 101 English Composition 4-0-4

Required of all first-year students and designed to teach students to write clear, vigorous prose, this course takes students through all stages of the writing process. Essay topics range from personal narratives to logical arguments. All students learn the resources of the NHTI library and write at least one documented research paper. **Available in Honors format.**

### EN 102 Introduction to Literature 3-0-3

An introductory survey exposing the student to representative works from the major genre forms: fiction, poetry and drama. **Available in Honors format.**

### EN 120 Communications 3-0-3

This survey course focuses on the application of communication principles and theories, enabling students to develop public speaking, interpersonal, intrapersonal, and group communication skills. Through an in-depth look at self-concept, verbal and nonverbal language and listening skills, students gain an increased awareness of the way they perceive themselves and others as well as the cultural and ethical implications of behavior. Coursework includes a variety of speeches, exercises, and writing assignments. **Available in Honors format.**

#### EN 120CM Communications 3-0-3

Through this survey course focusing on the application of communication principles and theories, students will develop public speaking, interpersonal, intrapersonal and group communication skills. Through an in-depth look at self-concept, verbal and nonverbal language and listening skills, students gain an increased awareness of the way they perceive themselves and others as well as the cultural and ethical implications of behavior. Coursework includes a variety of speeches, exercises and writing assignments. Sections identified as CM (Communicating Mindfully) feature the study of mindfulness and incorporate mindfulness meditation as an instructional method while exploring aspects of contemplative neuroscience and emotional intelligence as they relate to effective communication.

#### EN 120CW Communications 3-0-3

Designed for students who intend to continue their

education beyond the associate's level, this course emphasizes writing and communication skills to help students succeed in upper level college courses. This writing intensive seminar puts equal emphasis on process and product, giving students the opportunity to develop metacognitive abilities and improve interpersonal communication skills. Through this survey course focusing on the application of communication principles and theories, students will develop public speaking, interpersonal, intrapersonal and group communication skills. Through an in-depth look at self-concept, verbal and nonverbal language and listening skills, students gain an increased awareness of the way they perceive themselves and others as well as the cultural and ethical implications of behavior. Coursework includes a variety of speeches, exercises and writing assignments. Sections identified as CW (Communicating Mindfully) also feature the study of mindfulness and incorporate mindfulness meditation as an instructional method while exploring aspects of contemplative neuroscience and emotional intelligence as they relate to effective communication.

### EN 121 Introduction to Film 3-0-3

The art, history, technology and theory of the narrative motion picture from the silent period to the present.

### EN 125 Communication and the Literature of Science and Technology 3-0-3

Built around the theme of science and technology, this course focuses on improving communication skills. Areas of study include critical reading, critical thinking, public speaking, interpersonal communication and writing. Topics of readings may vary and could include any of the following: physical and technical sciences; natural and health sciences; or social sciences.

### EN 135 Introduction to Media Studies 3-0-3

This course focuses on the nature, development, and effects of various media in relation to culture and society. Students will gain an understanding of print and electronic media, public relations, advertising, media policy and law, global communications, and media ethics. Coursework includes a variety of presentations, exercises, and writing assignments. (Successful completion of EN 101 strongly recommended.) **Note:** This course does not satisfy NHTI's Humanities or English Literature requirements.

### EN 150 Introduction to Drama 3-0-3

An introductory survey involving the study of drama as literature and performance beginning with the Greeks and continuing through Shakespeare to the present.

### EN 160 Introduction to Poetry 3-0-3

A course designed to make students aware of the aesthetic value of poetry and to develop their critical skills as readers. Included is an in-depth study of the various genres and structural elements of poetry. Genres considered are sonnet, ode, elegy, ballad, epic, dramatic monologue and open form.

Structural elements surveyed include imagery, sound, rhythm, rhyme, tone and diction.

### **EN 201 English Composition II 3-0-3**

Aiming at higher levels of writing competencies, this class focuses on analysis, argument and research. It addresses issues of style and structure, from the sentence level to the whole essay, and incorporates peer review and critique. Students are required to collect and evaluate information, to analyze subjects from a variety of critical perspectives and to use logic to present and defend conclusions. Students compose essays of varying lengths, including shorter reflections and more sustained arguments. Individual instructors may choose to offer the course based on a theme. (Prerequisite: EN 101 with a grade of "C" or higher)

### **EN 210 British Literature I 3-0-3**

This course traces the development of British literature from the Middle Ages through the early eighteenth century and includes readings in poetry, fiction, essay, and drama. Authors' works will be examined within the cultural, philosophical and political climate in which they were created. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

### **EN 211 British Literature II 3-0-3**

This course traces the development of British literature from the late eighteenth century to the present. The poetry, fiction, essays, and dramas of several major authors of the Romantic, Victorian and Modern periods will be studied. Authors' works will be examined within the cultural, philosophical and political climate in which they were created. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

### **EN 214 American Literature Survey I: to 1865 3-0-3**

The course traces American Literature to 1865. Students read representative major, as well as minor, writers from all literary periods and various movements. Readings are set in the cultural contexts in which they were created. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.) **Available in on-line format.**

### **EN 215 American Literature Survey II: 1865 – present 3-0-3**

An historically-based survey course covering American literature from 1865 to the present. It is designed for English majors and others interested in the character and history of United States literature. Students read representative major, as well as minor, writers from various literary periods and movements. Readings will be set in an historical and cultural context. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

### **Special topics courses listed under EN 221 Film Genres and Directors**

Courses under this heading will offer students an advanced, focused examination of the art, history and theory of a body of narrative films, which may be related by genre, filmmaker,

country, style, movement, theme and/or culture and ideology. Courses will utilize viewing, lectures and class discussion and emphasize film theory, criticism and history.

Note: this course may be repeated for credit as topics change, providing student earned a grade of C or better. (Prerequisite: successful completion of EN 101, or equivalent, or permission of the Department Head of English; an introductory level literature course is highly recommended)

### **EN 221A - Images of Light 3-0-3**

Utilizing viewings, lectures and class discussion and emphasizing film theory, criticism and history, Images of Light explores the creative and dynamic interrelationships of filmmaking, particularly between the director and the director of photography; between the vision of a film and its realization.

### **EN 221B - Films of 1962 3-0-3**

This course is an examination of the year 1962 in film, arguably the best year in international filmmaking. Utilizing film viewing, lectures, projects and discussions the course will explore not only how and why international filmmaking reached its apogee in 1962 but also the lasting effects of these films and the filmmakers. Films screened include Jules et Jim; Eclipse; Through a Glass Darkly; Viridiana; Yojimbo; Last Year at Marienbad; Cleo From Five to Seven; Manchurian Candidate; To Kill a Mockingbird; Lolita; Ride the High Country; Miracle Worker; Man Who Shot Liberty Valance; and, Lawrence of Arabia.

### **EN 221C - American Independent Cinema 3-0-3**

An Independent Film is a film that has been funded independently of a Major Studio, typically the monies come from limited partnerships, personal loans, presales, private investors and even credit cards. The late 1980's and 1990's saw a tremendous emergence of US independent cinema, as an enormous variety of eccentric and challenging filmmakers and evolving film styles came to America. This course will focus on American Independent Film Directors, the process of conception, funding to creation and distribution of their initial film will be examined. With several Directors we will explore their achievements as well as their studio flops.

### **EN 221D - The Modern Classics 3-0-3**

Utilizing viewings, lectures, class discussions, presentations and emphasizing film theory, criticism and history, "The Modern Classics" (the influences on or films since the 1994 release of Quentin Tarantino's "Pulp Fiction") explores the audacity, range, depth and stylistic experimentation of the newest wave of filmmaking, as seen through American and foreign films.

### **EN 221E - German Expressionism 3-0-3**

Utilizing viewings, lectures and class discussion and emphasizing film theory, criticism and history, German Expressionism explores the creative and dynamic interrelationships in Germany of the Expressionist Film Movement in the time between the two world wars as well as the re-interpretation of that period prior to reunification. Expressionism and Post-Expressionism as movements will be explored within the context of the



times, concentrating on the intensity of the artist's inner world capturing the nightmarish quality of artistic vision. Emphasis will be placed on the "mood" of Expressionism and how art anticipates history.

#### **EN 221F American Cult Cinema 3-0-3**

The course will allow us to view, research, and discuss nearly two dozen motion pictures more or less widely regarded as "bad movies" in one or more ways. In seeking to determine intelligently what factors might contribute toward cinematic badness, we will consider subject matter, personal and societal prejudices, the effects of the passing of time, the effects of change, stigmatization of particular movie genres and/or directors and/or actors, and a wide variety of other aspects relating to viewer perception of a movie's quality or lack thereof.

#### **EN 221G - Darkness & Light: Film Noir 3-0-3**

Utilizing viewings, lectures and class discussion and emphasizing film theory, criticism and history, *Darkness & Light: Film Noir* explores the origins of Film Noir and examines not only pre-noir films but also noir films of the classic period as well as noir films of the post-classic and modern periods.

#### **EN 221H - Alfred Hitchcock 3-0-3**

An in-depth study of the film techniques and unique storytelling genius of Alfred Hitchcock, including an examination of the influences of other directors and cinematic movements on Hitchcock. This course will trace his career as the "Master of Suspense" from his early films in England to his American works and includes the star system, character development, storyboards, and the art of the action montage.

#### **EN 221I - Stanley Kubrick 3-0-3**

As a director known for controversial films such as *Lolita*, *Dr. Strangelove*, and *A Clockwork Orange*, Stanley Kubrick repeatedly bucked the Hollywood mainstream, emerging as an outsider who resisted the scrutiny of conventional film criticism and biography. This class will study in-depth the film techniques, influences of other directors and cinematic movements, and unique storytelling of Stanley Kubrick.

#### **EN 240 Cultural Identity through Young Adult Fiction 3-0-3**

Students will read, discuss, and evaluate a range of literature written for young adults (grades 8-12). This course will investigate the social and cultural "norms" that are presented to teens through the literature written for them. Students will consider whether YA literature is reflective of changing cultural norms, or if the shifts in popular literature can shape the collective identity of a generation of teens. In addition to exploration of mass media spin-offs and popular literature fads, students will also critically analyze the major contributing authors in modern YA literature, and how the common themes teens deal with are handled by those authors. (Prerequisite: EN 101 or equivalent with a grade of "C" or higher, or permission of the Department Head of English)

#### **EN 251 Contemporary Drama 3-0-3**

A seminar focused on major European and American drama since the 19th century. Through reading, discussion and lecture regarding the works of major writers, students are exposed to contemporary issues in the development of the dramatic art. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

#### **EN 255 Shakespeare 3-0-3**

A study of representative works by William Shakespeare. Selections are chosen from histories, comedies, and tragedies. Students are introduced to the social and cultural characteristics of the Early Modern Period, to the biography of the author, and to various issues surrounding the life and works. No previous knowledge of Shakespeare is assumed. (Prerequisite: successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended)

#### **EN 260 The Novel 3-0-3**

A genre class designed for advanced students, "The Novel" selects from a wide range of representative texts in this essential literary form. Students will read approximately eight works of fiction. Selections may be drawn from any period of literature from the 18th-century origin of the form up to the present and may incorporate both texts written in English as well as English translations of non-English texts. Readings will be set in their historical and cultural contexts and will display the wide range of texts covered by this word "Novel." (Prerequisite: **Honors Only**. Students must have earned a B+ or better in EN101 or receive approval from the instructor.)

#### **EN 272 Modern Short Fiction 3-0-3**

A study of fiction focusing on elements and themes of the short story art form in stories written in the past 150 years. Through close reading, lectures and discussions, stories are placed in the contexts of literary trends, and periods. Biographical information may also be studied to gain a better understanding of the unique styles and perspectives of individual authors. (Prerequisite: successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended)

#### **EN 285 Literature, Technology and Culture 3-0-3**

This course examines the cultural implications of science and technology in the modern world. Students study a range of essays and fictional works in traditional literature, science, and science fiction, which may include such works as *Frankenstein* and *Brave New World*. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

#### **EN286/TECP 86 Introduction to Linguistics 3-0-3**

The course focuses on linguistics, the scientific study of language. We will explore the properties of language and the linguistic challenges faced by English language learners. The course will expand upon the subfields within the linguistics: phonetics and phonology, morphology and syntax, semantics and pragmatics. Concepts relevant to teaching English will be taught: pronunciation, grammar, and vocabulary. Language variation and written discourse will also be addressed as well as how to apply this knowledge to the English language

classroom. Linguistic principles and features of both English and other languages will be examined to promote familiarity with the language experiences of English language learners. A native speaker of a world language will act as a "grammar text" as we decipher an unknown grammar in a field methods format. This course is required for those in the TECP: ESOL certification program. Others must have permission from the Director of TECP or the Director of Cross Cultural Education. (Prerequisites: EN 101, minimum of B average in EN 101.)

### **EN 287 Women in Literature 3-0-3**

Images and roles of women in literature are traced from historical to contemporary times through a study of selected works in fiction, poetry and drama. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

### **Special Topics courses listed under EN 291 Contemporary Issues and World Literature**

An investigation of current and enduring issues through world literature. Emphasis on 20th century works, but works from other periods also considered. Topics vary from year to year and with the instructor. See department for details of current offerings. (Prerequisite: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.) **Available in Honors format.**

### **EN 291A Contemporary Latin American Literature 3-0-3**

Images and examples of Latin American culture in literature are traced from historical to contemporary times with an emphasis on 20th century contemporary works through a study of selected works in fiction, poetry, film and drama.

### **EN 291B Contemporary Spanish Literature 3-0-3**

Through a study of selected works in fiction, poetry, film, and drama, this course traces images and examples of Spanish culture and relevant issues through various landscapes, comparing current and post-war issues as well as literary conversations and connections to American and European literature. The emphasis is on contemporary works. It is available in the on-line format. (Prerequisites: Successful completion of EN 101 or equivalent and an introductory level literature course are highly recommended.)

[Students interested in an enrichment travel experience related to this course should contact the English Department Chair. The travel portion of this course is not required. **Students should note that the cost of the trip to Barcelona is not included in the tuition for this course. Students are responsible for all costs of this trip.**]

### **Special topics courses listed under EN 295 Creative Writing**

Courses under this heading are designed for writers interested in learning about creative writing. Students will present and critique their own original work and the work of their classmates as well as examine published works. Additionally, students will explore the various elements of drama, fiction or poetry or mixed genre, depending on the

focus of the specific course. Information on preparing a manuscript for submission and publication may also be included. (Prerequisite: EN 101 or permission of the instructor; a literature course is recommended)

### **EN 295A Creative Writing: Fiction 3-0-3**

This is a course designed for writers interested in learning more about the craft of fiction writing. Students will examine published short stories in the classic and contemporary canon as well as present and critique their own work and the work of others. Additionally, the students will explore some of the genres of fiction in more depth including science fiction and fantasy, mystery and children's books. Lectures on preparing a manuscript for submission and the publishing industry are included as well. **Available in Honors format.** (Prerequisite: EN 101 or permission of instructor. Students who do not have the prerequisite may be asked to submit a writing sample before enrollment is confirmed. Suggested additional prerequisite: a literature elective.)

### **EN 295B Creative Writing: Poetry 3-0-3**

This course is designed for writers interested in learning about the craft of poetry writing. Students will present original work to their teacher and classmates for discussion and critique as well as examine published works. Additionally, the students will explore the various elements of poetry. Students will be expected to spend the majority of their time writing and revising original works. Information on preparing a manuscript for submission and publication may also be included. (Prerequisite: EN 101 or permission of the instructor; EN 102 or EN 160 is recommended)

### **EN 295C Creative Nonfiction 3-0-3**

This course provides an introduction to the art and craft of writing creative nonfiction, an approach to "telling the truth" that uses many of the tools of both fiction writing and journalism. Students will read, write, critique, and analyze pieces demonstrating the different styles in this genre: memoir, essay, and literary journalism. In addition, this course will include lectures, workshops, and peer editing. Students will experiment with the basic techniques of journalism, such as researching, reporting, and interviewing. The goal is to help students write stories that give meaning to experience, in a way that touches others. (Prerequisite: EN 101 or by permission of the instructor)

### **EN 295D Playwriting 3-0-3**

To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue-driven writing. The class will culminate in the writing and staged-readings of 10-minute plays and performance texts. Students are expected to attend, at their own expense, one live

theater production to be specified. (Prerequisite: EN 101 with a grade of "C" or higher) [Students receiving credit for EN295D cannot also receive credit for THTR 120.]

#### **EN 2495E Creative Writing: Young Adult Fiction 3-0-3**

This course is designed for writers interested in learning more about the craft of writing fiction for young adults. Students will examine published short stories and novels in the classic and contemporary canon for readers ages 12-17, as well as present their own work and critique the work of others. Students will explore some of the subgenres of young adult fiction in more depth, including science fiction and fantasy, edge, and horror, and study how the major themes relevant to teen readers are addressed in those subgenres. Students may choose to work on a series of short stories or on a longer, novel-length piece. (Prerequisite: EN 101 or equivalent with a grade of "C" or higher, or permission of the Department Head of English)

#### **EN 298A Contemporary Spanish Literature: Barcelona Travel Lab 1-0-1**

Following the study of selected works in fiction, poetry, film and drama, this course explores through travel to Barcelona many of the places referenced in these works and provides a hands-on experience of Spanish culture. It is intended to reinforce and set the learning acquired in EN 291B. (Prerequisite: EN 291B with a grade of "C" or higher)[Students should note that the cost of the trip to Barcelona is not included in the tuition for this course. Students are responsible for all costs of this trip.]

## **English as a Second Language**

#### **LS 101 Basic Writing 3-0-3**

This course focuses on developing writing skills at the paragraph level. Students will have opportunities to develop writing skills through a learning process that integrates reading, writing, and grammar practice. In learning and practicing a variety of writing tasks, students will gain increasing competence in expressing themselves in appropriate written English in an academic context. The developmental process also encourages cultural learning. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: Students must attain a minimum composite score of 55 on the MTELP. Completion of this course with a grade of "C" or better will satisfy the prerequisite for LS201 Academic Writing.)

#### **LS 102 Pronunciation Matters 3-0-3**

The purpose of this course is to guide students into speaking clear and natural American English. It addresses basics in pronunciation for clear communication. Contents include sound/spelling patterns, syllables, consonant/vowel problems, linking, stress, and rhythm. The course will be a learner-centered, encouraging interactive activities and practice. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: Students must attain a minimum composite score of 55 on the MTELP. Completion

of this course with a grade of "C" or better will satisfy the prerequisite for LS202 Clear Communication.)

#### **LS 104 American Culture I 3-0-3**

The major purpose of this course is to introduce and explore American culture through selected topics of interest. The course introduces typical American people, places, and ideas, providing students with essential information about the USA and stimulating cross-cultural exchange. This course emphasizes cultural awareness and addresses the four basic language skills - reading, writing, speaking, and listening. A variety of high-interest topics will enable students to take part in discussions, present short talks, solve problems, and interact with each other. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: Students must attain a minimum composite score of 55 on the MTELP. Completion of this course with a grade of "C" or better will satisfy the prerequisite for LS204 American Culture II.)

#### **LS 201 Academic Writing 3-0-3**

The goal of this course is to continue to prepare students for English composition and other academic writing at the college level. It focuses on developing writing skills at the essay level. Students will move from writing structured paragraphs to organizing, drafting, and revising complete essays. Course content includes introduction to patterns of essay organization such as the comparison and contrast, cause and effect, and process analysis. Grammar and complex sentence structures will be reviewed as needed. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** Prerequisite: LS 101 Basic Writing with a grade of "C" or better, or permission of the Department Head of Cross-Cultural Education as determined using the student's score on the MTELP.

#### **LS 202 Clear Communication 3-0-3**

The primary goal of this course is to help non-native speakers of English develop skills of oral communication and listening comprehension. Various pronunciation needs for communicating more effectively in academic or professional settings will also be addressed. The learner-centered instruction guides students in developing communicative English through a variety of interactive practices including stresses of words, intonations of sentences and styles of communication. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: LS102 Pronunciation Matters with a grade of "C" or better, or permission of the Department Head of Cross-Cultural Education as determined using the student's score on the MTELP.)

#### **LS 203 Grammar Practice 3-0-3**

This course focuses on training students in developing proficiency through active grammar practice. Students will have various opportunities to learn grammar structures through systematic themes as well as practical application through exercises. Reading and other communicative activities will be integrated. Grammar exercises will cover a broad content of both a scientific and humanistic nature as

well as selections from TOEFL. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: LS 101 Basic Writing with a grade of "C" or better, or permission of the Department Head of Cross-Cultural Education as determined using the student's score on the MTELP.)

### **LS 204 American Culture II 3-0-3**

The major purpose of this course is to expand the students' knowledge of the American culture through selected topics of interest. The course not only provides students with essential information about the USA but also stimulates cross-cultural exchange. This course provides students with the opportunity to conduct research and then develop and deliver presentations to the class on their findings. Four language skills - reading, writing, speaking and listening - are addressed in this course. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: LS104 American Culture I with a grade of C, or permission of the Department Head of Cross-Cultural Education as determined using the student's score on the MTELP.)

### **LS 205 Reading Comprehension 3-0-3**

The main goal of this course is to move learners toward higher proficiency in reading comprehension and cultural literacy by investigating concepts and texts related to many fields of study to include business, science, psychology, politics, technology, etc. Classes will emphasize a developmental process that integrates reading comprehension, vocabulary expansion, problem solving, critical thinking, and cultural literacy. Readings from journals, newspapers, and works of fiction and non-fiction will be explored in this course. **The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.** (Prerequisite: LS 101 Basic Writing or LS104 American Culture I with a grade of "C" or better, or permission of the Department Head of Cross-Cultural Education as determined using the student's score on the MTELP.)

## **Environmental Science**

### **ENV 101 Fundamentals of Environmental Science 3-2-4**

This course will provide an introduction to the structure, function and interactions of atmospheric, terrestrial and aquatic systems, as well as the impact of the human population on such systems. Topics will include basic scientific concepts and methods for understanding human population growth and their impact on the environment, including cycles of carbon, water and other materials, weather and climate, and sustainability of natural resources, in particular water and energy. The course will evaluate natural environmental processes, as well as human impacts to these processes, using case studies and real data to demonstrate the role of science in solving pressing environmental problems. (Prerequisite: high school biology and chemistry recommended)

### **ENV 290 Senior Project/Internship0-12-4**

This course serves as the capstone course for the Environmental Sciences program, in which the student will

demonstrate the application of the knowledge gained throughout the program. This will be achieved either by independent study investigating all sides of a current environmental issue selected by the student with guidance from his/her program advisor or through participation in a field internship with an approved industry partner. In either case, the student will submit a written paper and make an oral presentation of his/her project to all interested students, faculty, and industry partners in a seminar format. (Prerequisites: A grade of "C" or higher in all major field and other required science courses taken prior to the semester in which the student registers for this course and permission of the Department Head of Environmental Sciences. Prerequisites OR Corequisites: AR 160, GEOL 101, PI 242, BI 215)

## **Fine Arts**

### **DANC 101 Dance Survey I 0-5-2**

This studio class provides novice dancers with the fundamentals of strength and conditioning and an introduction to the basic dance genres of ballet, tap, jazz, and contemporary/lyrical. (Pass/No Pass grades only. Classes are held at the Concord Dance Academy. Students are required to wear dance-appropriate clothing.)

### **DANC 102 Dance Survey II 0-5-2**

This studio class builds on the fundamentals of strength and conditioning and the introduction to the basic dance genres of ballet, tap, jazz, and contemporary/lyrical presented in Dance Survey I. (Pass/No Pass grades only. Classes are held at the Concord Dance Academy. Students are required to wear dance-appropriate clothing.) (Prerequisite: Successful completion of Dance Survey I or placement audition.)

### **FA 105 Introduction to Music 3-0-3**

This course offers a fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. The pieces will be studied from aesthetic and historical perspectives.

### **FA 106 The History of Jazz, Blues and Rock and Roll 3-0-3**

This course examines the history of three of America's great musical contributions to world culture-jazz, blues and rock & roll-via detailed study of several masterpieces in each genre. Students will explore the fundamental musical elements, the historical roots and the development of musical traditions of each style. Various listening and vocal music guides will facilitate the student's knowledge and awareness.

### **FA 107 World Music 3-0-3**

Through the exploration of "soundscapes," or music within a cultural setting, students will learn sound characteristics and instrument classification that can be used for any type of music. Students will come to understand the significance of music within a culture. Students will develop critical listening skills and the vocabulary necessary to understand and evaluate music. No musical background is necessary.

### **FA 140 Introduction to Modern Dance 1-4-3**

This course is designed to guide students' knowledge and awareness of the performing art form that is Modern Dance

through the study of the history of modern dance via assigned readings and viewings of videotaped performances by various modern dance companies and through the physical development of a basic movement vocabulary, elementary dance technique, improvisation exploration, and composition. Students must wear fitted sweat pants, running pants or shorts, and fitted T-shirts or a leotard with footless tights or other dance/exercise clothing during class sessions. **This course will be taught at the Petit Papillon dance studio, which is a 10-15-minute drive from the NHTI campus. Students should plan their schedules to accommodate travel time.**

#### **FA 141 Ballet Fundamentals 0-3-1**

This course is designed to guide students' knowledge and awareness of the performing art form that is Classical Ballet through the following process: the study of the history of Classical Ballet by assigned reading, viewings of videotaped performances by various professional ballet companies, and by attending a live performance (**which may require special travel and separate ticket purchase**); the physical execution of basic ballet technique. (**Special attire - Women:** leotard and tights or other dance/exercise clothing, ballet slippers; **Men:** fitted sweat pants, running pants or shorts and fitted t-shirt.) **This course will be taught at the Petit Papillon Dance Studio, which is a 10-15 minute drive from the NHTI campus. Students should plan their schedules to accommodate travel time.**

#### **FA 150 Introduction to Guitar 3-0-3**

This course offers a fundamental approach to learning the guitar for beginning students with varied levels of experience. Students will be involved with and exposed to performance situations, some practical applications of music theory as well as different playing styles and techniques. Students must provide their own instruments. Acoustic instruments only.

#### **FA 155 Vocal Production and Performance 2-2-3**

This course offers an opportunity to study various aspects of vocal production and performance, which will include vocal process from theory to application. The vocal process will focus on optimizing one's vocal understanding through performance techniques and musicianship.

#### **THTR 101 Acting I 3-0-3**

Acting One is an introduction to drama as a performing art, with emphasis upon physical movement and the use of voice in the development of characterization. Students will learn to use improvisation and theatre games to make feelings accessible to the student actor for the purpose of performance. The class will take a functional approach to the basic techniques of acting with an in-class performance final. Students will be introduced to the fundamentals of acting that include action, relaxation, objective, spontaneity, emotion, monologues, texts, projection, presence, substitution, referential movement, character analyses, and heightened diction. It will include ideas about the rehearsal process, play scripts, scenes, staging, and performance.

#### **THTR 102 Acting II 3-0-3**

This course is a continuation of Acting I and is an introduction to diverse acting approaches through the practical study of

scenes and monologues in class. Exercises, exploring these various acting techniques, will be done in class and will be discussed/critiqued. The scene assignments may be taken from scripts assigned to students or be chosen by students with approval from the professor. Students will be required work in and outside of class and to attend two plays in the course of the semester—one on campus, one off campus. Emphasis will be placed on the special demands of scene analysis, milieu study and characterization, as well as beginning directing technique. Comfortable clothing for movement required. (Prerequisite: Acting I with a grade of "C" or higher)

#### **THTR 110 Introduction to the Theatre 3-0-3**

This course will provide a broad survey of the basic components of theatre. Because theatre is a study of the possible, that is, what may result from the collaboration of many talents, we will study it from a number of different perspectives. We will examine plays, the history of theatre as an art, acting, technical theatre, theatre's impact on society, and important practitioners in the field. Plays are unique in all of literature, because they are only finished in performance in front of an audience. To understand how plays come to their complete realization, we will see several productions, both on and off campus. The student will be responsible for the cost of one ticket for an off campus production.

#### **THTR 220 Playwriting 3-0-3**

To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue-driven writing. The class will culminate in the writing and staged-readings of 10-minute plays and performance texts. Students are expected to attend, at their own expense, one live theater production to be specified. (Prerequisite: EN 101 with a grade of "C" or higher) [Students receiving credit for THTR 120 cannot also receive credit for EN 295D.]

## **Foreign Language**

#### **FL 104 American Sign Language for Beginners 3-0-3**

This course will introduce students to basic knowledge and skills of American Sign Language. Students will achieve the beginning levels of fluency in communicating through the use of ASL.

#### **FL 105 Advanced American Sign Language 3-0-3**

This course will teach students the advanced skills and knowledge of American Sign Language. Students will achieve fluency in communicating through the use of ASL.

#### **FL 111 Elementary Spanish I 3-0-3**

A fully integrated introductory Spanish course. The course is designed for beginning Spanish students whose learning objectives and needs are in any of the following categories: continued language study, business purposes, or travel. The emphasis is to develop proficiency in communicative skills

concentrating on the dynamic application of the living language taught through dialog, phonetics and vocabulary. A strong grammar foundation and other basic language skills are taught through actual phrases and sentences, helping the student develop an instinctive sense of the correct usage. These objectives will be achieved through the following approaches: speaking, listening, reading, writing, and cultural studies.

#### **FL 112 Elementary Spanish II 3-0-3**

A fully integrated intermediate Spanish course. The course is designed for intermediate Spanish students whose learning objectives and needs are in any of the following categories: continued language study, business purposes, or travel. The emphasis is to consolidate and reinforce the language skills acquired in Elementary Spanish I or the equivalent and to continue building communicative skills and cultural appreciation. The course continues to offer a comprehensive review of basic first year grammar structures, while developing proficiency and advancement in communicative skills concentrating on the dynamic application of the living language taught through dialog, phonetics and vocabulary. A strong grammar foundation and essential language skills are taught through actual phrases and sentences, helping the student develop an instinctive sense of the correct usage. These objectives will be achieved through the following approaches: speaking, listening, reading, writing, and cultural studies. (Prerequisite: FL 111, the equivalent or permission of department head of English)

#### **FL 115 Elementary German I 3-0-3**

This course is designed for beginning German students who are interested and motivated in speaking and learning about the rich German language and culture. It is designed for continued language study, travel and business purposes. Since a German native speaker will be teaching the course, the emphasis will be in communicative as well as written skills of the living German language. Vocabulary and phonetics studies will be enhanced through visual and auditory means. Dialogue and oral presentations will help students form and develop these skills. For correct usage of the language, a strong grammar foundation will be given through multiple reading, speaking, writing and listening practices. Current German topics will also be discussed and there will be German guest speakers.

#### **FL 116 Elementary German II 3-0-3**

This course is designed for students who have been exposed to the German language and have knowledge of German present-, past- and present perfect-tenses. Students should be motivated and interested in speaking German and learning about the rich German culture. The class is designed for continued language study, travel and business purposes. Since a German native speaker will be teaching the course, the emphasis will be in communicative as well as written skills of the living German language. Vocabulary and phonetics will be enhanced through visual and auditory means. Dialogue and oral presentations will help in forming and developing these skills. For correct usage of the language a strong grammar foundation will be given through multiple reading, speaking, writing and listening practices. German history and current German topics will also be discussed and there will be German guest speakers.

#### **FL 121 French I 3-0-3**

An introduction to basic French language, history, and culture through a balanced four-skills approach to learning through listening, speaking, reading, and writing activities. Multimedia resources, interactive language programs, videos, and the Internet will be used. **French I is geared toward students who have no previous knowledge of the language.**

#### **FL 122 Elementary French II 3-0-3**

A fully integrated intermediate French course that uses a multimedia approach to emphasize near-complete immersion in the French language and to build on the skills outlined in French I (FL 121). **French II is intended for students who have one or two years of high school French.** (Prerequisite: FL 121 or equivalent)

#### **FL 130 Mandarin Chinese I 3-0-3**

Mandarin Chinese I is an introductory course for students with no background in the language. The student will learn to speak and understand standard Mandarin and read and write simplified Chinese characters. Students will develop speaking and listening skills through audiovisual media, interactive activities, and pair dialogue practice. Reading skills are developed through graded reading activities. Character writing practice and composing short pieces will develop writing skills. A strong emphasis on grammar provides the necessary framework to communicate clearly and effectively. Short lectures and the reading and sharing of current event news will develop an understanding of Chinese culture, past and present.

#### **FL 132 Mandarin Chinese II 3-0-3**

Mandarin Chinese II is designed for students who have been exposed to Mandarin Chinese and have knowledge of the Pinyin system. A strong interest in writing and learning characters is essential. Graded reading of short passages will help students remember Chinese characters and increase reading comprehension. Students will continue to improve pronunciation and tone. Conversation ability will continue to increase through listening and conversation practice. Chinese history and current events will be discussed. (Prerequisite: FL 130 Mandarin Chinese I or permission of the instructor)

## **General Studies**

#### **GS 100 College Success Seminar 1-0-1**

This course introduces students to the foundations of college success and to the academic environment and community of NHTI. Academic advising, assessment of skills and interests, and career and transfer research help students to identify academic and professional goals and support lifelong learning. This course is required for all General Studies and Associate in Arts in Liberal Arts majors except for those enrolled in GS 102 Study Strategies or for those planning to apply for experiential credit (see GS 101 below). **Please see the General Studies department head for the Waiver Policy for this course.**

#### **GS 101 Assessment of Prior Learning 1-0-1**

This course, required for all General Studies majors who wish to apply for experiential learning credit, will assist the

student in defining career objectives and preparing proposals for experiential learning credit. It will include advising and in-class writing sessions.

### **GS 102 Study Strategies 2-0-2**

Through the presentation of topics ranging from reading and study strategies to stress management, students become better equipped to adjust to the college experience and increase their chances of academic success. Individual periodic conferencing is also a key element of the course. It is open to all students and required for some AGS students. Waivers from GS 102 can be granted for students transferring two or more college level classes with grades of B- or better. GS 102 will fulfill the GS 100 course requirement for all General Studies and Associate in Arts majors. GS 102 may **not** be taken as an elective to meet graduation requirements.

### **GS 102EL Study Strategies for Non-Native Speakers of American English 2-1-2**

Through the presentation of topics ranging from reading and study strategies to stress and time management, students become better equipped to adjust to the American college experience and increase their chances of academic success. Group discussion and periodic individualized conferencing are also key elements of the course. GS 102EL will fulfill the GS 100 course requirement for all General Studies and Associate in Arts in Liberal Arts majors. GS 102EL may **not** be taken as an elective to meet graduation requirements. (Prerequisite: LS 201 or permission of the Director of Cross-Cultural Education; Corequisite: LS 103 or permission of the Director of Cross-Cultural Education)

### **GS 104 Study Strategies Seminar 1-0-1**

Designed for students who were required to take GS 102 and whose cumulative GPA is 2.69 or below after the first semester. Study Strategies Seminar provides students opportunities to further develop and apply college success strategies to their second-semester courses while maintaining contact with their academic advisor through frequent conferencing. GS 104 may **not** be taken as an elective to meet graduation requirements. (Prerequisite: GS 102)

## **Geology**

### **GEOL 101 Essentials of Geology 3-2-4**

This course introduces students to the basic geological principles, including minerals, rock formation, volcanism, weathering, external and internal processes in sculpting and modifying landscapes, geologic time and history, global cycles, and human impacts on geological processes. Environmental resource use and conservation issues are also addressed. Required field trips. (Prerequisites: high school level biology with lab and high school level chemistry with lab with grades of "C" or higher).

## **Gerontology**

### **GE 195 Gerontology Practicum I 2-8-4**

The student will work in an approved Gerontological setting under the supervision of an approved professional. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice I the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: HU 104, HU 111, HU 221, MH 187 and a major field GPA of 2.0)

### **GE 298 Gerontology Practicum II 2-8-4**

Students will continue their field experience work in an approved Gerontological setting under the supervision of an approved professional. Skills, knowledge and personal characteristics are built upon and integrated into the learning and supervision of this course, as well as second year coursework including ethics, individual counseling and conflict resolution. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice I the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: GE 195, HU 104, HU 111, HU 221, MH 187 and a major field GPA of 2.0)

## **Health Science**

### **HS 101 Medical Terminology 3-0-3**

A course designed to promote an understanding of the proper use, spelling, pronunciation and meaning of medical terms. This course emphasizes learner participation through group activities and reading assignments. Basic anatomy and physiology and common pathology of the body systems will also be discussed. Designed for people working in the health care environment.

### **HS 104 Health Care Data Content and Delivery Systems 3-0-3**

This course will introduce the generic components of the content, use and structure of health care data and data sets, how these components relate to primary and secondary record systems and to introduce legal and ethical issues applicable to health information. Discussions will include health record content, documentation requirements comparing the various regulatory agency requirements and introduction to payment and reimbursement systems. The organization, financing and delivery of health care services in both the hospital and the medical office practice will also be discussed.

### **HS 120 Care and Prevention of Athletic Injuries 3-2-4**

This course covers basic first aid and the principles and techniques involved in prevention and care of common athletic injuries. Weekly lab sessions will be used to demonstrate and practice special tests, taping and wrapping,

and recognition of athletic injuries, and will coincide with material covered during lecture.

### **HS 125 Coaching Principles I 3-0-3**

This course will focus on sport philosophy, sport pedagogy, and sport management for success as a coach at any level. Topics include: educational techniques, leadership, planning, legal aspects, successful coaching strategies, practice, event and game management. Students will explore the principles and foundations of coaching required to develop and successfully administer a sport at any level.

### **HS 150 Introduction to Personal Wellness 1-1-1**

This course will help students to make thoughtful lifestyle choices regarding exercise and diet. Students will learn to measure fitness levels using objective measures and to influence personal fitness levels with wise nutritional choices and regular exercise. Introduction to Personal Wellness is "active." Students should expect movement, exercise, fun, and play.

### **HS 152 Personal Trainer Course 3-2-4**

This course addresses pertinent topics for the fitness professional and bridges the gap between theory and practice through practical hands-on training performed within the classroom and lab portions of the course. Following a structured "read, write and apply" format, students will attain the knowledge and abilities necessary to competently perform the tasks required of successful fitness professionals. Upon completion of the course, students should be well prepared to take the National Council on Strength and Fitness NCSF-CPT examination.

## **History**

### **HI 104 Western Civilization: Antiquity to 1650 3-0-3**

This is the first of a two-course sequence about Western civilization. Study of history addresses the goals of being an educated person by liberating the learner from a narrowed perspective. Thinking about and understanding the past clearly provides for better alternatives in the present and the future. This course provides opportunities to learn about major historical events and trends from the earliest civilizations up to the Reformation which have shaped the past, present and will impact on the future. Social, political, intellectual and economic changes will be among the topics explored, as will critical scrutiny of Western tradition.

### **HI 105 Western Civilization: 1650 to Present 3-0-3**

Study of history addresses the goals of being an educated person by liberating the learner from a narrowed perspective. Thinking about and understanding the past clearly provides for better alternatives in the present and future. This course provides opportunities to learn about major historical events and trends since the mid fifteenth century which have shaped the past, present and will impact on the future. Social, political, intellectual and economic changes will be among the topics explored, as will critical scrutiny of Western tradition.

### **HI 120 United States History to 1870 3-0-3**

This is a course that explores the critical historical events that

have interacted to shape life in this country from its discovery until 1870. Included will be the discovery of America; colonization; social, political and economic development; the American Revolution; political documents which establish our form of government (Declaration of Independence/Constitution); slavery, the Civil War; and Reconstruction. Major topics are emphasized within a chronological framework and serve as a systematic introduction to United States History prior to 1870.

### **HI 121 US History, 1870 - Present 3-0-3**

A course which explores the critical historic events and forces that have interacted to shape life in the U.S. Topics will include: the Industrial Revolution, World Wars, the Cold War, the role of the U.S. as a world power, social revolutions, the Great Depression, and the workings of democracy within the republic.

### **HI 131 World History I (to 1500) 3-0-3**

This course examines the histories of civilizations in Asia, Africa, Europe and the Americas from the earliest times to 1500. The interrelationships among these societies, and their political, social, economic, religious and cultural features will be explored.

### **HI 132 World History II (1500 - present) 3-0-3**

This course examines the histories of civilizations in Asia, Africa, Europe and the Americas from 1500 to present. The interrelationships among these societies, and their political, social, economic, religious and cultural features will be explored.

### **HI 221 New Hampshire History 3-0-3**

New Hampshire History is a general survey of New Hampshire's past, from prehistoric periods to the present. The course will be chronological in nature, with emphasis on certain key topics such as immigration and ethnicity, rural development, urban and industrial growth, tourism, environmental changes, and the evolution of government. Students will not simply be exposed to major events and personalities in New Hampshire history, but they will explore ways that people removed from us in time have made their living upon the land we call New Hampshire. In addition, students will use state and local resources to better understand the very nature of history and ways that the study of history provides a better appreciation of ourselves and the world in which we live.

## **Hospitality and Tourism**

### **HT 101 Introduction to the Hospitality and Tourism Industry 3-0-3**

An introductory course providing an overview of the structure and scope of the travel/tourism and hospitality industries. This course examines the components of the tourism industry: transportation, accommodation, food and beverage, and attractions. Other topics include the history, political, social and cultural impacts tourism has on local, state and global environments. A section of the course is devoted to the State of New Hampshire Tourism environment. Students will review marketing, motivation and other forces that draw guests to the State of New



Hampshire. Students will be required to prepare a career-planning outline. **A Travel Fee of \$75 will be assessed for all students taking HT 101. The money will be used to defray some of the costs associated with student travel experiences.**

#### **HT 110 Introduction to Hotel Operations 3-0-3**

This course surveys the impact technology has on the tourism/hospitality industry. Students will look at the Internet from the perspective of tourism provider distributing information through web and mobile applications. Students will research ways social media can be used to market their product. Other areas examined are customer service, management, legal, and intellectual property issues on the Internet. (Prerequisite: HT 101 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

#### **HT 115 Introduction to Fitness, Spa, and Wellness Management 3-0-3**

This is an introductory course examining the interrelationships among fitness, spa, and wellness. Students will take a comprehensive look at industry basics: How to establish a wellness business, marketing and administrative practices, and client management. The course will evaluate many different approaches to maintaining a healthy lifestyle. A review of standard therapeutic programs will be studied. (Prerequisites: HT 101 recommended)

#### **HT 140 Domestic and International Tourism 4-0-4**

This course examines key destination areas of the Western and Eastern Hemispheres. Students will review the major geographical characteristics of each region by exploring the locations' terrain, climate, culture and political aspects. An evaluation of sales opportunities for each destination is studied.

#### **HT 205 Quality Service Management 3-0-3**

This course examines the techniques and methods in delivering exceptional quality service for external and internal customers. Students will learn the skills and attitudes for service management through observation, video, case studies, and role play. Students will review the processes of Total Quality Management. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

#### **HT 210 Information Technology for Tourism 2-2-3**

This course surveys the impact technology has on the tourism/hospitality industry. Students will look at the components of the tourism industry - transportation, accommodation, attractions, and food and beverage - on the Internet. Students will look at the Internet from the perspective of a traveler as well as a potential vendor distributing information. Other areas surveyed are: legal issues; customer service; marketing; destination planning; and special interest. Students will survey the Worldspan® reservation system basic availability, sell, fares, and PNR (Passenger Name Reservation) formats. (Prerequisite: HT 101 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

#### **HT 211 Sports Tourism 3-0-3**

This course looks at the relationship between the sports and the tourism industries. Sport has become a motive for people to travel, leading to an industry that now focuses on sports attractions, events, and experiences available to tourists. The study of sports tourism draws upon the disciplines of sport psychology, sociology, geography, management, leisure and recreation behavior. As part of the course requirements, students will take a 3-4 night trip to a destination such as Orlando, Florida to visit world class sport and convention facilities. This is an additional expense to the student. This course is team taught by the sports management and travel/tourism programs.

#### **HT 225 Front Office Operations 3-0-3**

A comprehensive study of the front desk operations from a small inn to a full-service hotel. The student will explore front and back office systems. Topics include reservation procedures, registration, auditing, tour groups and check out procedures, room control, maintenance on guest accounts, public relations and sales. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management/Hotel Administration)

#### **HT 227 Legal Issues for the Hospitality Industry 3-0-3**

Students will review theory and the application of general and contract law as they relate to business regulations. A further study of the legal procedures as they apply to the statutes and common law governing innkeeper's liability. Students will also learn the legal issues as they relate to the travel and tourism industry. Additional topics include: disclaimer of liability, safe keeping facilities, guests' rights, personnel issues and other hospitality related issues. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

#### **Special topics courses listed under HT 230**

Courses listed under this heading provide the opportunity to focus on specialized topical issues encompassing the tourism/hospitality industry and will be offered with an interdisciplinary approach. Faculty will be presenting material not normally covered in regular course offerings. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

#### **HT 230A Writing for the Travel Professional 3-0-3**

Travel writing provides some of the most powerful, elegant, and descriptive forms of writing. Travel writing ranges across the whole of the modern world, dealing with issues as varied as environment, culture, history, geographic, and political issues. The first part of the course will review the evolution/history of travel writing. The second part will review current trends in travel writing for many types of media: TV; radio; print advertisements; short stories; and essays. The student will write an article for publication. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 230B Principles of Ecotourism Management 3-0-3**

This course will introduce students to the history, concepts, marketing, planning and management of ecotourism activities and development. Students will exam the relationship between natural and cultural resources with a special focus on rural areas, wildlife sanctuaries and other areas of forests, mountains, beaches and islands people's way of life for sustainable use in tourism. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 245 Event, Meeting and Convention Planning 3-0-3**

This course gives students the experience in developing an event, meeting and/or conference program. Students will go through the step-by-step process of pre-planning, budget/agenda preparation, and marketing the event. Other topics include sales, negotiations and contracts. Students will complete a portfolio to include an agenda, floor plan, budget and brochure. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 247 Principles of Wedding Planner Management 3-0-3**

This course provides an introduction to the planning and management of weddings. Students will examine all aspects of wedding planning from event coordination to design and planning of weddings, including destination weddings. Key content to be studied includes: culture, contracts, timelines, budgets, venues, food and beverage management, ceremonies, music, and correlated issues. Time management skills are key to success in this course. (Prerequisite: Permission of the Department Head of Hospitality Management)

**HT 260 Hospitality Sales and Marketing 3-0-3**

This course focuses on the hospitality markets and products. The student will analyze the organization of the hotel sales and marketing department by looking at the importance of increasing revenue through special market segment, planning itineraries with tour operators, brochure design and advertisement. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 261 Principles of Corporate Travel 3-0-3**

This course provides an overview of travel within the business community. Emphasis is on interpretation of business policies, procedures of a corporate travel agent, supervisor and manager in a travel or business environment. Additional topics include developing incentive, promotional meetings and convention travel. This course is not offered each year.

**HT 263 Tour Planning and Cruise Sales 3-0-3**

The first half of the class is devoted to planning, guiding and escorting tours. Students will develop a tour, budget and marketing plan. Additional areas covered are group behavior, ethics and dealing with the unexpected disasters. The second half will focus on the cruise industry. Knowledge of cruise lines, destination, amenities and marketing/sales is examined. Students' understanding of the relationship geography has to identification of cruise ports is also studied.

Sales skills and qualifying the client in selecting of cruise is reviewed. (Prerequisite: HT 101 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 269 Food and Beverage Management 3-0-3**

Students will examine the financial relationship of the food and beverage aspect of the hotel industry. Topics covered are: marketing, food purchase controls, production, service, management of bar and beverage, sales techniques and sanitation.

**HT 270 Catering Operations 3-0-3**

Food Service can determine the success or failure of any event. Catering Operations examines how a conference/event planner designs and implements the food service needs of the event. Students will review menu planning and design, software programs, beverage operations service and standards training. (Prerequisite: HT 101 or HT 110 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 280 Senior Travel Seminar 2-0-2**

This course addresses current issues in the hospitality/tourism industry through discussion, reports (oral and written) and professional literature. Students will examine business ethics, professional development and case studies. Additional topics include resume preparation and interviewing techniques. Students will complete a portfolio. (Prerequisite: HT 101 with a grade of "C" or higher or permission of the Department Head of Hospitality and Tourism Management)

**HT 290 Hospitality and Tourism Internship 0-9-3**

The internship offers the opportunity to put learned theory to practical application in a supervised work environment. Students are required to complete a minimum of 90 hours and complete a portfolio on the internship. Periodic conferences between the site supervisor and NHTI internship coordinators are scheduled to monitor and evaluate student progress. This course is limited to seniors and requires the approval of the Department Head. (Prerequisite: 2.5 GPA in major field courses and permission of the Department Head of Hospitality and Tourism Management)

**HT 295 Hospitality and Tourism Summer Residency Program 0-3-1**

This is a hands-on, interactive practicum in which students will experience the operations of a hotel/resort while in residence. Students will complete five (5) full days engaging in the back-of-the-house operations. The hotel areas include: Front Desk, Housekeeping, Engineering, HR, Food and Beverage, Meeting and Convention Space, Sales and Marketing, and Recreation Operations. Proficiency in each of these hotel operations is required for successful completion of the program. **[NOTE: Residency costs at the designated hotel/resort are the responsibility of the student and will be an additional cost above tuition and fees.]** (Prerequisites: HT 101 or HT 110, HT 205, HT 225, HT 245 or 247, HT 260, HT 269 or HT 270; cumulative GPA of 2.5 or higher; Permission of the Department Head of Hospitality and Tourism Management)

## Human Service

### **HU 104 Introduction to Practicum Experience 2-0-2**

A course designed to introduce and familiarize the student with Human Service Practicum procedure, responsibilities, and protocol. Special skills needed in Human Service work will also be reviewed, including: record keeping interviewing skills; preparation of practicum portfolio and resume; and writing competency goals and objectives. Students will then apply these skills as they move out to observation opportunities and practicum interviews. Meetings with the professor will also occur for practicum approval and site selection.

### **HU 111 Introduction to Human Service 3-0-3**

An introductory course identifying the programs and activities of social and human service. Focuses on the practical problems facing the human service/mental health worker and examines the attitudes and objectives to be attained.

### **HU 195 Human Service Practicum I\* 2-8-4**

The student will work in an approved human service setting under the supervision of an approved professional. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice in the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: HU 104, HU 111, HU 221 and MH 187)

### **HU 221 Social and Professional Issues in Today's Society 3-0-3**

The student will examine and explore a variety of social and professional issues in today's society relating to the helping field. Skill and knowledge-based topics necessary for the success of the student's career in today's workplace may include basic human needs in homelessness, poverty, advocacy work, grant writing/proposals/funding, culturally competent counselor standards and community mental health delivery systems, as well as professional issues and skills that face today's helping professional.

### **HU 242 Ethics and the Professional Helper 3-0-3**

A case related study of the ethical principles determining the standards of practice in the Human Service Field including Mental Health and Addiction Counseling. This course is reserved for the practitioner. Topics taken from the related national code of ethics will be discussed. The issues presented will be role-played and resolved according to universal philosophical principles. Philosophy as the foundation of professional practice guides this course. It will meet professional requirements for ethical training. (Prerequisite change: HU-111, MH-187, AD-120 (AD majors only), all with a grade of "C" or higher

### **HU 298 Human Service Practicum II\* 2-8-4**

The student will continue his/her field experience work in an approved human service setting under the supervision of an approved professional. Skills, knowledge and personal

characteristics are built upon and integrated into the learning and supervision of this course, as well as second year coursework including ethics, individual counseling and conflict resolution. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice in the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: HU 104, HU 111, HU 221, HU 242, HU 195 ,MH 187 AND HU 195)

**\* The student will also complete an interview with the practicum coordinator the semester prior to the first scheduled practicum. Special requests regarding practicum entrance may be brought to the department head by the student. Review of the requests will be made by the department faculty and special exemptions may be made for entrance into the practicum.**

## Information Technology

### **IT 102 PC Applications 3-0-3**

The course introduces students to desktop applications with an emphasis on topics from a user perspective. Topics include use of: an operating system, a word processor, a spreadsheet, presentation software, Internet and hardware and software considerations. (Note: Students may not receive credit for both IT 102 and IT 102X)

### **IT 102A PC Applications Accelerated 3-0-3**

These accelerated versions of PC Applications are designed for those students who are more experienced in IT essentials and comfortable with self-directed learning. Students enrolling in IT 102A should expect topics to be introduced and developed by the instructor more quickly than in traditional sections of IT 102. The course introduces students to desktop applications with an emphasis on topics from a user perspective. Topics include use of an operating system, a word processor, a spreadsheet, presentation software, Internet and hardware and software considerations. (Prerequisite: Minimum score of 20 on the computer placement test AND a minimum score of 50 on the LASSI motivation placement test OR permission of the Department Head of Information Technology). (Note: Students may not receive credit for both IT 102 and IT 102A. Similarly, students may not receive credit for both IT 102A and IT 102X.)

### **IT 102X PC Applications Extended 2-2-3**

This extended version of PC Applications is designed for students less experienced in IT essentials. Topics are introduced and developed at a slower pace to enhance learning. The course introduces students to desktop applications with an emphasis on topics from a user perspective. Topics include use of an operating system, a word processor, a spreadsheet, presentation software, Internet and hardware and software considerations. (Note: Students may not receive credit for both IT 102 and IT 102X)

### **IT 106 IT Career Topics 1-0-1**

This course is a series of presentation and panel discussions

by experts and leaders in the field on the important topics in Information Technology careers. It provides information which helps students plan their college work and anticipate how they will apply it in subsequent professional positions. Students with two years or more of work experience in the computer field may request a waiver from the course. Students will take IT 106 the first half of the semester and GS 100 the second half.

#### **IT 108 Personal Computer Hardware and Software 2-2-3**

This course is an in-depth exposure to computer hardware and operating systems. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer as well as install multiple operating systems and diagnostic application utilities. In addition, an introduction to networking is included. This course prepares for the CompTIA's A+ certification through the use of materials that align to the A+ Exams. Students registering for this course should be proficient in daily computer use (such as downloading and installing software from the Internet) and should be familiar with computer terms.

#### **IT 110 Programming Fundamentals 2-2-3**

Introduces students to program design using the C# language. No prior programming knowledge is necessary. Students encounter and resolve a range of programming problems by applying techniques of design, structured coding, debugging, error-handling and troubleshooting. The course begins by exploring procedural syntax and concludes with an introduction to object-oriented programming. Topics include: problem analysis, computer logic and flow control, decision and repetition structures, argument passing, program documentation, class definitions and use of a debugger.

#### **IT 118 Mobile Application Development 2-2-3**

A hands-on training course for designing and building mobile applications. This course walks students through a series of app-driven exercises showing the relationships among application building blocks. (Corequisite: IT 110; or permission of the Department Head of Information Technology)

#### **IT 140 Database Design and Management 2-2-3**

Introduces students to the basic concepts used in database design. It later introduces students to more advanced topics that include: Structured Query Language (SQL), data modeling, and the creation of tables, forms, queries, and reports. The lab component includes development of business applications using a relational database, MS SQL Server.

#### **IT 151 Introduction to Networks 2-2-3**

Introduces the architecture, structure, functions, components, and models of the Internet and computer networks. The principles of IP addressing and fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. A grade of "C" or higher must be achieved to continue to IT 153.

#### **IT 153 Routing and Switching Essentials 2-2-3**

Describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPV1, RIPV2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. A grade of "C" or higher must be achieved to continue to IT 251 (Prerequisite: IT 151 with a grade of "C" or higher).

#### **IT 183 Introduction to RedHat Linux 3-3-4**

Students will learn to be effective users of Linux systems, acquiring skills and understanding of command line functions, file systems, users and groups, bash shell, process management, text editors, network applications, searching and organizing data, and graphical applications.

#### **IT 184 Linux Core Systems Administration 3-3-4**

Students will learn to be effective administrators of Linux systems, mastering tasks such as hardware and device configuration, file system management, user administration, network configurations, kernel services, attaching new Linux systems to a corporate network, configuring the new systems for end-users, and troubleshooting.

#### **IT 200 Spreadsheets 3-0-3**

This course provides training in introductory and advanced topics related to spreadsheet creation, formatting and printing. Topics include row and column operations, formula creation (including functions), graph creation and printing, database management techniques, and macro design and execution. (Prerequisite: IT 102 or permission of the Department Head of Information Technology)

#### **IT 210 Object Oriented Programming 2-2-3**

Begins with an introduction to the Java programming language and then uses both Java and C# programming languages to cover topics such as: arrays, strings, collections, exception handling and object-oriented programming. Object-oriented programming covers problem conceptualization, class definition, object instantiation, method definition and invocation, the principles and practices of reuse, inheritance and polymorphism. It also introduces graphical user interfaces and event-driven programming. (Prerequisite: IT 110 or permission of the Department Head of Information Technology)

#### **IT 213 Introduction to Web Programming 2-2-3**

Provides hands-on training to create dynamic web applications using ASP.NET and Visual Studio. Students will learn how to leverage the power of the .NET framework to build business web user interfaces. Topics include: events, properties, syntax, event managing, database acquisition and error handling. The lab component will focus on developing business applications. (Prerequisite: IT 110 or permission of the Department Head of Information Technology)

#### **IT 215 Advanced Windows Programming 2-2-3**

This course builds on the concepts learned in IT 210. Students will learn to use Java and C# programming languages to

develop Data Structures and Algorithms. Later in the course, C# and .NET Framework will be used to develop Collections, Generics, Window Graphical User Interfaces (WinForms and WPF), and LINQ to Entities (collection, SQL and XML). Hands-on labs include performance analysis of sorting and searching algorithms, as well as business applications development with a GUI that uses LINQ to access a database. (Prerequisite: IT 210 or permission of the Department Head of Information Technology)

#### **IT 240 Advanced Web Programming 2-2-3**

Students will learn programming concepts that will enable them to create a commercial website. Students create the following components as needed: administration pages, login pages, security, shopping cart and Pay Pal integration. Website components will be created by applying knowledge of client/server application development, Structured Query Language (SQL), Extensible Markup Language (XML), database design and implementation. The lab component will include the development of a commercial website using relational databases and ASP.NET. (Prerequisites: IT 140 and IT 213 or permission of the Department Head of Information Technology)

#### **IT 251 Scaling Networks 2-2-3**

Describes the architecture, components, and operations of routers and switches in a large and complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, STP and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network. A grade of "C" or higher must be achieved to continue to IT 253 (Prerequisite: IT 153 with a grade of "C" or higher).

#### **IT 253 Connecting Networks 2-2-3**

Discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students also develop the knowledge and skills needed to implement IPsec and virtual private network (VPN) operations in a complex network. (Prerequisite: IT 251 with a grade of "C" or higher).

#### **IT 254 Advanced Routing 2-2-3**

This course is a continuation of Networking Theory II, examining advanced Router Concepts and configurations. Students will install, configure, operate and troubleshoot complex WAN networks. Topics will include more advanced Frame Relay networks, dial Access services and distance-vector versus link-state routing protocols. Advanced Router Access Control Lists for blocking unauthorized access to private networks will also be covered. (Prerequisite: IT 252)

#### **IT 256 Remote Access 2-2-3**

This course examines advanced LAN switching concepts including Virtual Local Area Network (VLANs) and Internetwork troubleshooting. Students will configure layer 3

and 4 constraints on switches to implement various levels of security and separation on top of basic VLANs. Internetwork troubleshooting will include all seven layers of the OSI model from the application down to the physical layer cabling. Students will be expected to design, configure and troubleshoot complex WANs and LANs. (Prerequisite: IT 252)

#### **IT 258 Advanced Switching 3-2-4**

This course builds upon Networking Theory II, examining advanced LAN switching concepts including Virtual Local Area Networks (VLANs) and Internetwork troubleshooting. Students will configure layer 3 and 4 constraints on switches to implement various levels of security and separation on top of basic VLANs. (Prerequisite: IT 252)

#### **IT 260 Advanced Networking Design and Troubleshooting 3-2-4**

In this class students will be expected to design, build and troubleshoot complex Local and Wide area networks incorporating the knowledge gained from the previous networking courses. Internetwork troubleshooting will include all seven layers of the OSI model from the application layer down to the physical layer cabling. (Prerequisites: IT 254, IT 256 and IT 258)

#### **IT 263 Security I 2-2-3**

This course is designed to give students the skills needed to identify and resolve computer and network security issues. The course will provide students an introduction to firewalls and other network security components that can be used to work together to create an in-depth defensive perimeter around a Local Area Network (LAN). Students will learn how to: identify threats; plan and design firewalls; develop a security policy; configure routers, workstations, servers, switches and firewall equipment for various packet filtering and security measures; create user authentication policies and methods; design and set up Virtual Private Networks (VPN); maintain and troubleshoot these systems. (Prerequisite: IT 108, IT 151, IT 153 and IT 280 (IT 280 can be taken as a prerequisite or as a Corequisite))

#### **IT 264 Wireless LANs-Design, Installation and Security 2-2-3**

This course is an introduction to Wireless LANs focusing on security, design, planning, implementation, operation and troubleshooting of wireless LANs. It will include a comprehensive overview of technologies and design best practices with particular emphasis on hands-on skills in the following areas: wireless LAN set-up and trouble-shooting; WLAN security; 802.11b/g technologies (productions and solutions); site surveys; resilient WLAN design (installation and configuration); and vendor interoperability. This course is targeted to those who need to gain the knowledge to deploy and secure a wireless LAN. Students will be expected to have a basic understanding of Local Area Networks and be familiar with configuring network settings on Windows XP. (Prerequisites: IT 108 and IT 150)

#### **IT 267 CCNA Voice 2-2-3**

This senior level course incorporates both theory and hands-on labs on topics such as connecting IP phones to the LAN infrastructure, installing Call Manager Express (CME), CME phone configuration, gateway and trunk concepts and configuration, as well as other topics pertaining to Voice over

Internet Protocol. Students successfully completing this course will have mastered the skills necessary to install a Cisco VoIP solution for a small to midsized company. (Prerequisite: IT 250 with a grade of "C" or higher)

### **IT 270 Web Design and Development I 2-2-3**

Fundamentals of graphic design, as applied to the web, are discussed and web sites created using an HTML web authoring tool. Topics include: web site planning and testing; web page layout; proper navigation; use of color and images; web hosting; publishing to a server; promoting web sites; web site accessibility; and legal issues in web design. Participants reinforce their web design skills through the design, development and publishing of their own web site design project. Note: Students are expected to have a working knowledge of PC operating systems (i.e., Windows) and word processing (i.e., MS Word).

### **IT 272 Web Design and Development II 2-2-3**

This course builds on the skills developed in Web Design and Development I with emphasis on advanced techniques that create animation, interactivity and the use of audio. During the class, students plan the "story" of their project and then use the techniques learned in class exercises to create an animated site with audio effects. Other topics include: creating vector graphics; drop down menus; and publishing multimedia sites. (Prerequisite: IT 270 or permission of the department head of Information Technology)

### **IT 274 Internet (Electronic) Commerce 2-2-3**

In this course, students are introduced to both the business and technical aspects of Internet (Electronic) Commerce. Included are: developing an e-commerce business strategy, identifying and prioritizing business processes for electronic commerce, evaluating internal versus outsourcing of electronic commerce, marketing on the Internet and measuring the results of electronic commerce initiatives, electronic commerce site servers, automated exchange of business information between an organization and its business partners, security considerations, and developing an organization's "Digital Nervous System" to exploit the advantages of electronic commerce. Web Team Project work is used to simulate an electronic commerce implementation environment and an implementation plan is created. (Prerequisite: IT 102 or IT 108 or permission of the department head of Information Technology)

### **IT 280 Windows Server Operating Systems 2-2-3**

The focus of this course is on the use of network operating systems in a business environment. Topics include business analysis, matching systems needs within appropriate network configuration, data and systems security measures for user groups sharing files and resources, print services, network interconnectivity and related network management issues. (Prerequisites: IT 108 and IT 150)

### **IT 282 Virtualization 2-2-3**

Explores concepts and capabilities of virtual architecture with a focus on the installation, configuration, and management of a VMware virtual infrastructure, ESX Server, and VirtualCenter. Covers fundamentals of virtual network design and implementation, fundamentals of storage area networks, virtual switching, virtual system management, and

engineering for high availability. (Prerequisites: IT 108 and IT 152 with grades of "C" or higher)

### **IT 293 IT Career Development 1-2-2**

This course consists of a series of readings, exercises, and presentations designed to prepare students to succeed in their IT careers. Topics include resume writing, personal networking, job search resources, interviewing, compensation negotiation, career development, and considerations in working from home. Students will make a series of visits to companies for networking purposes and must obtain an internship for the following semester. Students will make a formal presentation to the Internship Review Board (IRB) to obtain internship approval (Prerequisites: IT 108, and IT 150)

### **IT 294 Senior IT Internship 1-4-3**

Capstone course for the Information Technology curriculum providing application of skills acquired in a "Real World" environment. Students test their ability to organize and interpret data, develop and apply programmed solutions to problems and submit thorough documentation of the task. (Prerequisite: IT 293)

## **Interdisciplinary**

### **IDS 101 STEM in the First Year Experience 3-0-3**

This interdisciplinary course introduces new college students to a STEM field (science, technology, engineering, and math) through integration with the social sciences and humanities while at the same time developing the "habits of mind" and academic skills critical to first-year college success. Through examination of a special topic, students will be challenged to reflect on the behaviors that both improve and impede their learning of specific subject matter and their overall academic progress. (Enrollment limited to first-time college students and transfer students with fewer than 12 credits by permission of authorized academic advisors. Interested students should contact the Advising Center.)

### **IDS 120 Global Public Health Issues 3-0-3**

This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. Using the perspectives of public health, the course will cover factors associated with the development of health problems and efforts to prevent disease in impoverished areas. Students will also explore the role of social communication, politics, religion, economics, education and culture in contributing to global public health issues and will integrate these factors and values in developing solutions to the widespread public health issues impacting communities worldwide. Students will learn about the magnitude of disease in the developing world (e.g., communicable and non-communicable disease, women and child health, nutrition, and unintentional injuries) and how health is assessed and how health systems effectively work together to improve global health. (Note: This course may be used to meet EITHER an "SO" elective OR an "HU/FA/FL" elective, but not both.)

# Landscape Design

## **LD 101 Identification and Uses of Trees 3-0-3**

Students will be introduced to evergreen and deciduous trees commonly found and used in the Northeast. Emphasis will be on identification, cultural requirements and design applications in the landscape. Students will become proficient in identifying trees by recognizing distinctive features such as height, form, twig and bud characteristics, leaf shape, color and flowers.

## **LD 102 Identification and Uses of Shrubs, Groundcovers and Vines 3-0-3**

Students will be introduced to evergreen and deciduous shrubs, vines and groundcovers commonly found and used in the Northeast. Emphasis will be on identification, cultural requirements and design applications in the landscape. Students will become proficient in identifying plants by recognizing distinctive features such as height, form, twig and bud characteristics, leaf shape, color and flowers.

## **LD 109 Basic Site Grading and Surveying 2-2-3**

This course is designed to familiarize students with surveying techniques and grading principles that are integral to interpreting topographical information and understanding natural and man-made features that influence grade changes in the landscape. Emphasis will be on practical and basic applications of survey equipment, note-keeping, plotting and other measuring techniques that are useful to landscape contractors and designers. Practical exercises include incorporating designed features such as stairs, retaining walls, ramps, walkways, swales, etc., into the landscape. (Prerequisites: high school level Algebra I and Algebra II, with grades of "C" or higher, are recommended)

## **LD 112 Landscape Drawing and Presentation Techniques 2-2-3**

This course focuses on learning the fundamentals of landscape design drawing necessary to graphically communicate design ideas. Students will learn techniques to improve line quality, lettering, sketching, rendering and drawing layout. Black and white and color media will be used. These drawing and rendering techniques will be used to create presentation quality site plans, elevations and perspectives. The use of computers as a means in creating presentation drawings will be introduced.

## **LD 115 Landscape Architectural Design Theory 3-0-3**

This course introduces the student to the field of landscaping architecture. Lectures, reading and problem-solving exercises provide a basic overview of historical, philosophical and technical aspects of the profession of landscaping architecture. The course will also explore how design, site environment and legislation affect the design process.

## **LD 217 Small Scale Design Project 2-2-3**

A studio project involving a real site to develop techniques of site analysis, client interview, and program development of a base sheer from field measurements and designing a site plan that corresponds to the client's needs, site conditions, human scale, and environmental contexts. Also included is the development of site details for decks, patios, pools,

fences, and site furniture. (Prerequisites: LD 102, LD 109, and LD 112 or permission of the Department Head of the Landscape and Environmental Design program)

## **LD 220 Planting Design 3-0-3**

Lecture includes the combination of landscape elements when used with architectural, aesthetic, engineering, and climate control uses of plants. Students work in graphics skills and develop the ability to produce professional quality plans. (Prerequisites: LD 102 and LD 112)

## **LD 225 Landscape Construction Details and Methods 2-2-3**

A survey of the materials used in landscape constructions, the methods used in assembling the materials into the landscape and the forces acting on the structures. Included are the characteristics and properties of each of the landscape materials and the relative costs of the materials, including installation. Landscape materials and methods to be studied include site work, various paving materials, various structural materials, and site drainage materials. The student will learn how to read plans and also prepare plans showing construction details including: walls, walkways, wooden structures, and water features. (Prerequisite: LD 112 or permission of the Department Head of the Landscape and Environmental Design program)

## **LD 270 Sustainable Landscape Principles and Practices 3-2-4**

This course will introduce and examine the principles and practices required to create a sustainable environment. Issues facing communities locally and globally will be examined and discussed. Emphasis will be placed on methods used to create landscapes that improve the environment by conserving resources and reducing chemical application. Students will learn how site design, plant selection, and pest and water management practices influence the sustainability of the designed landscape. (Prerequisites: LD 102, LD 112, and LD 220)

## **LD 290 Senior Project/Internship 0-12-4**

As the capstone course of the Landscape and Environmental Design curriculum, this course will require the student to demonstrate integration and application of the knowledge and skills from all courses in the program. This may be achieved either through a comprehensive senior design project developed by the student under the guidance of a faculty member or through participation in a field internship with an approved industry partner. In either case, students will be required to provide regular and ongoing documentation of the learning experience to ensure that all course and program goals are met. (Prerequisite: LD 102, LD 112, LD 220 with grades of "C" or higher and the approval of the Department Head of the Landscape and Environmental Design program)

## **Learning Support**

Individualized learning support courses for students who need structured guidance, applied study skills, and instruction in time management strategies.

**Students enroll in LC courses to help them progress toward independent, self-directed learning and the rigors of college work. LC courses must be taken in conjunction with courses being taken for credit; earn institutional credit only; may not be taken as electives to meet graduation requirements, and are not eligible for financial aid. In addition, students in the AGS/AGS\* programs must either be concurrently enrolled in or have already successfully completed GS 102 (Study Strategies).**

**Students must register with permission of the Coordinator of Disabilities Services or the Director of the Learning Center for any combination of up to 3 total LC courses, not to exceed a maximum of 6 credits toward GPA during enrollment at NHTI.**

At the conclusion of any LC course enrollment, students are encouraged to use the academic supports available to all students, such as Math Lab, Writing Center, Computer Lab, request for tutor, assistive technology, and computer-aided instruction. See the "Learning Center" section elsewhere in this catalog.

#### **LC 111 Learning Skills Support 1-0-1**

Students complete individual contracts consisting of a total of 15 contact hours. Students can register for LC 111 by Week 7 of the semester.

#### **LC 112 Structured Learning Support 2-0-2**

Students complete individual contracts consisting of a total of 30 contact hours. Students can register for LC 112 by Week 4 of the semester.

#### **LC 113 Intensive Learning Support 3-0-3**

For students who need significantly more time than the typical one to two hours of independent work required for each hour of class time. Academic guidance for those who have not demonstrated successful progress in the past will include addressing reasons for lack of success, such as fit with program requirements, goals, need for additional structure, and formal support. Students complete individual contracts consisting of a total of 45 contact hours. Students can register for LC 113 by Week 3 of the semester.

## **Legal Nurse Consultant**

#### **LNC 101 Legal Nurse Consulting 1-0-1**

This course is the introduction course for the Legal Nurse Consulting program and provides a comprehensive program for the principles and practices of Legal Nurse Consulting today. This course examines issues of health care and nursing law, as well as the judicial system. This course utilizes the most current and authoritative textbook in the specialty of legal nurse consulting and presents all facets of the practice

#### **LNC 102 Risk Management 1-0-1**

The student will define and exam risk management as well as be provided with the legal knowledge to assess and reduce risks to patients, visitors, staff and institution. The student will develop the tools for formulation of plans aimed at reduced risks.

#### **LNC 103 Administrative Law 1-0-1**

The course covers the delegation of power to agencies, the procedures followed by agencies, and judicial and other oversight of agencies. The power of agencies to promulgate rules, decide individual cases, and conduct investigations is carefully studied.

#### **LNC 104 Healthcare Law 2-0-2**

The course focuses on issues in the healthcare industry such as organization, treatment, staff requirements, regulatory compliance and record management. Topics include the delivery of healthcare services, private and public financing of healthcare services and ethical considerations.

#### **LNC 105 Legal and Healthcare Ethics 1-0-1**

Examination of ethical issues. Topics include legal professional ethical rules, healthcare ethical issues with emphasis on skills necessary to guide self and others in process of ethical decision making.

#### **LNC 106 LNC Internship 0-9-3**

The internship offers the opportunity to combine the theoretical and practical issues of the classroom in the workplace setting. Students are required to complete a specified number of hours in a law-related environment or healthcare setting. Meetings will be held with the internship coordinator to discuss the ongoing experience.

## **Manufacturing Engineering Technology**

#### **MF 111 Manufacturing and Materials Processing 3-3-4**

The course is designed to provide a basic understanding of traditional methods of materials processing used in product manufacturing. Through lectures, demonstrations, and firsthand laboratory exposure, the student is given the theory and applications of each process. The following are covered: casting, extruding, forging, molding, forming, heat treating, joining, and an introduction to machining methods, both conventional and numerically controlled.

#### **MF 202 Measurement and Control 3-2-4**

The course begins with the study of basic electronics (analog and digital) and electronic components (transistors, op-amps, SCR's). Electromechanical principles are introduced, leading to consideration of sensors and transducers used in production processes. Paralleling this sequence is the development of programming in Visual Basic. These two paths join during the second half of the course where programming logic controllers (PLC's) and relay ladder logic (RL) are presented. In the laboratory, students gain hands-on experience with all hardware and software covered in the course. (Prerequisites: PH 135 (or basic AC/DC theory))

#### **MF 210 Lean Manufacturing 4-0-4**

A study of the concept of Lean Production applied to the manufacturing sector. The course covers the fundamental concepts and philosophy of lean used to achieve operational excellence. Lean concepts such as waste reduction, one-piece flow, pull systems, constant continuous improvement, development of personnel into leaders. Lean concepts/tools



covered will include kaizen, value stream mapping, work standardization, kanban, 5S, 5 why, A3 report, just in time (JIT), and takt time.

#### **MF 220 Manufacturing Processes and Machine Tools 3-3-4**

A technical study of the theory, equipment and application of machine tool and metal removal processes. In addition to understanding machining methods, the economics and comparison between machining methods are stressed. Processes covered are turning, milling, drilling, broaching, abrasive machining, finishing, numerical control as well as electrical and chemical machining. Theory is applied through actual machine operation in laboratory. (Prerequisites: EN 125, MF 111 and MC 105)

#### **MF 231 Production Systems 3-0-3**

A study of the organization of the production system as well as the techniques used to control its operation. Topics covered include forecasting, production planning, plant layout, inventory control, work measurement, job sequencing, and operation scheduling. An introduction to Lean Manufacturing concepts is also provided. (Prerequisite: MF 111)

#### **MF 241 Computer Integrated Manufacturing (CIM) 3-3-4**

A study of flexible industrial automation as it applies to product-producing industry. Particular emphasis is on robotics, numerical control and computer integrated manufacturing. The basic theory and application of these areas are studied. In the laboratory portion of the course, the student has the opportunity to set up, program, and operate all aspects of a computer-controlled manufacturing system. Programmable logic controllers, vision systems, and a variety of robotic devices and CAM capabilities are included. (Prerequisites: MF 202 and MF 220) (This course replaces PLTW 104 Computer Integrated Manufacturing.)

#### **MF 252 Quality Control 3-2-4**

A study of the techniques used to collect, organize and analyze information which can be used in making decisions regarding quality. The course will begin with the basic principles of statistics and probability and will then develop such topics as process capability, process control, acceptance sampling and reliability. The scope of quality will be expanded to include such topics as reliability, quality costs, product liability and quality systems. The laboratory sessions will provide the student with the opportunity to apply the principles developed in the classroom through the use of computer examples and "hands-on" exercises. (Prerequisites: MT 124)

## **Mathematics**

#### **MT 091 Prealgebra 4-0-4**

This course will review the essential math skills required for success in an elementary algebra course. Topics include: basic arithmetic operations with whole numbers; signed numbers; fractions; decimals; percent; ratio and proportion; basic algebra; graphing. The institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA. Completion of this course requires a grade of "C" or higher.

#### **MT 093 Algebra Part I (with Geometry) 4-0-4**

The first in a sequence of preparatory courses. Topics include: fractions; decimals; percent; exponents; real numbers; polynomials; proportions; scientific notation; linear equations and inequalities; graphing; geometric concepts; formulas. The institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA. Completion of this course requires a grade of "C" or higher. (Prerequisite: MT 091 with a "C" or higher, or recommendation of Math Department based on placement testing.)

#### **MT 094 Algebra Part II (with Trigonometry) 4-0-4**

The second in a sequence of preparatory courses. Topics include: systems of linear equations; radicals; complex numbers; factoring; rational expressions and equations; quadratic equations; exponential and logarithmic expressions and equations; graphing functions; measurements; trigonometry. A graphing calculator will be required for certain topics.\* The institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA. Completion of this course requires a grade of "C" or higher. (Prerequisite: MT 093 with a grade of "C" or higher.)

#### **MT 115 Practical Mathematics in Electronic Technology 4-1-1**

This course is designed to reinforce basic mathematical concepts and introduce terminology and problem solving with applications employed in Engineering Technology to students planning to enter the AGGP, EET, or CPET curriculums. Topics include: algebra; engineering notation; precision and accuracy of numbers; literal equations; unit conversions; basic electric circuits; component identification; measurement techniques. Exercises and laboratory experiments will concentrate on developing methods of analysis employed in problem solving. Emphasis is placed on terminology and development of methods and analytical skills applied in engineering technologies. Theory will be reinforced through laboratory experiments. A graphing calculator will be required.\* Grading will be Pass/Fail.

#### **MT 120 Topics in Applied College Mathematics 4-0-4**

This course is designed to expose the student to a wide range of general mathematics. Problem solving and critical thinking skills, along with the use of technology, will be emphasized and reinforced throughout the course as the student becomes actively involved in solving applied problems. Topics include: number theory and systems; functions and modeling; finance; geometry; measurement; probability; statistics; selected subtopics related to the student's major field of study. (Prerequisite: MT 093 with a grade of "C" or higher or the high school equivalent with a grade of "C" or higher.)

#### **MT 124 College Algebra 4-0-4**

Topics include: linear, quadratic and higher degree equations; rational, radical, exponential, and logarithmic equations; graphs of functions; models and applications of functions; systems of linear equations; matrices, conic sections; sequences and series; trigonometry. A graphing calculator is required.\* (Prerequisite: High School Algebra I with a grade of "C" or higher (or equivalent), or MT 093 and MT 094, both with grades of "C" or higher.)

**MT 125 Finite Mathematics 4-0-4**

Topics include: matrices; linear programming; counting techniques; sets; probability; statistics; mathematics of finance; Markov chains; game theory. Applications will be emphasized. A graphing calculator will be required.\* (Prerequisite: MT 124)

**MT 129 Math for Allied Health 3-0-3**

This course is designed for students in the allied health fields. Topics include: arithmetic operations; geometry; conversion of units; dosage calculations; linear functions, statistics and probability; inductive and deductive reasoning. A graphing calculator is recommended.\* (Prerequisite: High school Algebra I with a grade of "C" or higher, or MT 093 and MT 094 with grades of "C" or higher.)

**MT 140 Precalculus 4-0-4**

Topics include: rational functions; polynomial and rational inequalities; right triangle trigonometry; graphs of trigonometric functions; trigonometric identities and equations; oblique triangles; polar coordinates and equations; vectors; systems of equations and inequalities; linear programming; matrices; rotation of conic sections; counting methods; binomial theorem; limits. A graphing calculator is required. (Prerequisite: MT 124 or recommendation of Math Department based on placement testing.)

**MT 205 Calculus I 4-0-4**

This course in the calculus of one variable will include: limits; derivatives of algebraic, trigonometric, exponential and logarithmic functions; antiderivatives; and an introduction to integration. Applications will be stressed throughout the course including: velocity, acceleration, curve sketching, optimization and related rates. A graphing calculator is required.\* (Prerequisite: MT 140 or recommendation of Math Department based on placement testing.)

**MT 206 Calculus II 4-0-4**

Topics include: indefinite integration; the definite integral; the Fundamental Theorem of Calculus; integrals of elementary transcendental functions; techniques of integration; polar coordinates; and power series including Taylor series. Applications will be stressed throughout the course including: area; volumes of revolution; centroids; and moments of inertia. A graphing calculator is required.\* (Prerequisite: MT 205)

**MT 208 Multivariable Calculus 4-0-4**

A study of vectors, vector products, vector algebra, and vector-valued functions; motion in space; partial differentiation, gradient, divergence, curl, chain rule, tangent planes, extrema, Lagrange multipliers; multiple, line, and surface integrals; divergence, Green's and Stokes' theorems. A graphing calculator is required.\* (Prerequisite: MT 206)

**MT 210 Differential Equations 4-0-4**

Topics include: methods of solving and applications of ordinary first- and second-order differential equations; Laplace Transformations; series solutions; basics of linear algebra; systems of differential equations. A graphing calculator is required.\* (Prerequisite: MT 206)

**MT 251 Statistics 4-0-4**

Topics include: basic measurements of central tendency and variability; frequency distributions; probability; binomial, Poisson, Chi-square, Student t, and normal distributions; sampling distributions; estimation of parameters; hypothesis testing; correlation; simple and multiple regression; prediction intervals. A graphing calculator will be required.\* (Prerequisite: MT 124)

**MT 271 Probability and Statistics for Engineers and Scientists 4-0-4**

Topics include: descriptive statistics; probability and probability distributions; statistical test and confidence intervals for one and two samples; building regression models; designing and analyzing experiments; statistical process control. Includes use of a statistical software package throughout the course. A graphing calculator will be required.\* (Prerequisite: MT 205)

\* Texas Instruments model TI-83 or TI-84.

## Mechanical Engineering Technology

**MC 102 Design Graphics II 1-3-2**

A continuation of MC 101 into topics of Computer-Aided Drawing and Design (CAD). The CAD training will include detailing, assembly drawings, Geometric Dimensioning & Tolerancing (GD & T) and 3D solid modeling. (Prerequisite: MC 101)

**MC 105 Engineering Design 4-0-4**

This course introduces students to the fundamentals of engineering design and professional practice through the use of hands-on projects. Students will learn about the design cycle and the necessary steps to complete a successful project as a member of a team. Topics include problem identification, brainstorming, drawing and documentation, reverse engineering, testing and evaluation, and manufacturing. Cost, safety, and environmental issues are considered as well as ethical and professional responsibilities. Students will document designs using industry standard 3D modeling software and will be required to communicate their designs through written, oral, and graphical presentations. (This course replaces PLTW101 Introduction to Engineering Design.)

**MC 110 Engineering Principles 4-0-4**

This course is an introductory level survey course of engineering exploring a broad range of topics across multiple disciplines. Topics include mechanisms, energy, machine control, fluid power, statics, materials, statistics, and kinematics. Students will develop problem-solving skills and technology literacy as they create solutions to various challenges. The use of industry standard 3D CAD and Microsoft Office applications is integrated throughout as students document their designs in written and oral formats. (Prerequisite: MC 105, Corequisites: MT 133 or MT 109) (This course replaces PLTW 103 Principles of Engineering.)

**MC 150 Statics and Strength of Materials 3-2-4**

Analysis of external force systems acting upon bodies in equilibrium with subsequent treatment of the stresses and

strains induced. Laboratory projects will involve the use of nondestructive and destructive testing equipment to determine the various mechanical properties of materials and their behavior under load. (Prerequisites: MT 124 and PH 133)

#### **MC 205 Material Science 3-2-4**

This course studies the structures, properties and behavior of engineering materials as well as how they can be altered through mechanical working and heat treating. Materials considered are ferrous and nonferrous metals and their alloys, plastics and ceramics. Consideration is also given to the selection of these materials to meet manufacturing and design criteria. Laboratory experiments will complement the classroom presentations. (Prerequisites: CH 105; MC 150 strongly recommended)

#### **MC 229 Thermodynamics and Heat Transfer 3-0-3**

The fundamentals of equilibrium thermodynamics will be presented. Topics will include thermodynamic properties, processes, process diagrams, the First and Second laws, entropy, and an introduction to thermodynamic cycles. A brief study of heat transfer in its three modes (conduction, convection and radiation) will also be presented. (Prerequisites: MT 205 and PH 133)

#### **MC 250 Dynamics and Mechanical Design I 3-2-4**

A study of the effect of forces acting on rigid and deformable bodies subject to static and dynamic loading, and the utilization of this knowledge for the design of mechanical components. Major topics include strength and fatigue, kinematic analysis, power transmission, design methodology, and computer applications. (Prerequisites: EN 125, MC 105, MC 150 and MT 140)

#### **MC 260 Mechanical Design II 3-2-4**

A continuation of MC 250, treating the topics of rigid and elastic fasteners, shafts and bearings, welds, springs, clutches and brakes. A series of design projects combining several of these elements will be assigned. Computer methods will be employed where appropriate. (Prerequisites: MT 205 and MC 250)

#### **MC 280 Fundamentals of Geometric Dimensioning and Tolerancing (GD & T) 2-0-2**

A study of the technical language used to specify engineering design and drawing requirements with respect to actual "function" and "relationship" of part features. The Geometric Dimensioning and Tolerancing (GD & T) language is based on the US Standard ANSI/ASME Y14.5-1994. Practice in reading and applying the standard will be accomplished with video-taped presentations, discussion periods and workbook practice sessions. (Prerequisite: MC 101 or permission of department head of Mechanical Engineering Technology)

#### **MC 282 Senior Project 2-2-3**

This course integrates the previous course work and experiences of the students by allowing them to select, define, research, and report on a single, major technical topic of their choice. The formal classroom environment is set aside and the student works under the guidance of a faculty advisor. There are three distinct phases to the course:

proposal phase, development phase, and reporting phase. (Prerequisite: EN 101 or permission of department head of Mechanical Engineering Technology)

#### **MC 290 Hybrid Vehicle Technology 3-0-3**

A general engineering study of the hybrid vehicle design and its impact on the environment and industry. Engineering principles such as vehicle dynamics, energy conversion, energy storage, lightweight and composite materials, power transmission, basic electronics, and thermal management will be applied to a hybrid vehicle. Topics will include alternate fuels, emissions, power sources, and safety issues. (Prerequisites: MC 101, MT 140 and PH 133; or permission of department head of Mechanical Engineering Technology)

## **Medical Coding**

#### **MCD 116 Introduction to Hospital Coding 4-0-4**

The course provides an introduction to hospital coding concepts, nomenclature and classification systems. It includes discussion of inpatient reimbursement systems including prospective payment, managed care and other third party payers. An introduction to basic current hospital coding systems principles in assigning valid diagnostic and procedural codes is presented. "Official Inpatient Coding Guidelines" developed by the American Hospital Association (AHA) are utilized for accurate coding assignment of diagnoses and procedures. (Prerequisites: HS 101, HS 104, BI 120, and BI 122, each with a grade of "C" or higher; or permission of the Program Coordinator of Medical Coding)

#### **MCD 117 Intermediate Hospital Coding 3-0-3**

Presented in this course will be higher level current hospital coding systems principles in assigning valid diagnostic and procedural codes, expanding on and further applying concepts learned in Introduction to Hospital Coding. "Official Inpatient Coding Guidelines" developed by the American Hospital Association (AHA) are utilized for accurate selection of principal diagnosis and procedure and determining other diagnoses or procedures that will be coded. An introduction to the 3-M computerized grouper and encoder will be presented. (Prerequisite: completion of Introduction to Hospital Coding (HS 116) with a grade of "C" or higher.)

#### **MCD 218 Advanced Hospital Coding 3-0-3**

This is an advanced coding course which presents more complex cases using medical record reports. Students must read and interpret data utilizing prior learned skills from HS 101, BI 120, BI 122. The 3M computerized encoding and grouping system will be employed to provide experience in utilizing technology to select codes and to calculate DRG (diagnosis related groups) payments for prospective payment systems. The student will expand on and apply the principles of reimbursement and coding derived from Introduction to Hospital Coding and Intermediate Hospital Coding at an advanced level. The student will use the AHA "Official Inpatient Coding Guidelines" to accurately identify and sequence the principal diagnosis and procedure. Coding discussions will include determining which diagnoses or procedures should be included as secondary. (Prerequisite: completion of Intermediate Hospital Coding (HCD 117) with a grade of "C" or higher.)

#### **MCD 219 Ambulatory Coding 4-0-4**

This course presents hospital ambulatory coding using Current Procedural Terminology (CPT) coding systems for procedures and the current hospital coding system for diagnoses. Ambulatory reimbursement and payment systems are presented including prospective payment system and regulatory compliance issues. The course will include an introduction to ambulatory coding and applying the principles to medical record documentation. The 3M computerized encoding and grouping system will be employed to provide experience in utilizing technology to select codes and to calculate payments for prospective payment systems. (Prerequisite: completion of Advanced Hospital Coding (MCVD 118) with a grade of "C" or higher.)

### **Mental Health**

#### **MH 187 The Helping Relationship: Interpersonal Communication Skills for Today's Professional 4-0-4**

Knowledge, skills and personal characteristics that are needed in today's professional world of helping careers will be examined. Students will learn the purpose and skill of interpersonal communication techniques through various didactic and experiential methods. Coverage will include documentation and verbal and non-verbal communications, along with time management, self management and successful work practices. Dynamics of human behavior, culture and specific needs seen in the workplace will be explored.

#### **MH 195 Mental Health Practicum I\* 2-8-4**

The student will work in an approved mental health setting under the supervision of an approved professional. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice in the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: HU 104, HU 111, HU 221 and MH 187)

#### **MH 298 Mental Health Practicum II\* 2-8-4**

The student will continue their field experience work in an approved mental health setting under the supervision of an approved professional. Skills, knowledge and personal characteristics are built upon and integrated into the learning and supervision of this course, as well as second year coursework including ethics, individual counseling and conflict resolution. Periodic conferences between the Supervisor and Practicum Coordinator are planned in order to evaluate the student's progress. At the close of the semester, the student will submit documentation of the practicum activities/experience and demonstrate the ability to relate theory to practice in the chosen field of experience. The student will complete a total of 125 hours of field experience. (Prerequisites: HU 104, HU 111, HU 221, HU 242, MH 187 and MH 193)

**\* The student will also complete an interview with the practicum coordinator the semester prior to the first scheduled practicum. Special requests regarding practicum**

**entrance may be brought to the department head by the student. Review of the requests will be made by the department faculty and special exemptions may be made for entrance into the practicum.**

### **Nursing (RN)**

All nursing courses integrate theory and clinical experience. Failure to receive a satisfactory grade in either theory OR the clinical experience portion of the course will result in a failing grade. All nursing major field courses must be passed before proceeding to the next level. A grade of "C" or higher is required in BI 195, BI 196 and BI 202, math elective, of MT 124 or higher level math (excluding MT 129) to enter or progress in the nursing courses.

#### **NU 115 Nursing I 5-9-8**

Nursing I introduces the student to the role of the associate degree nurse and the concepts of nursing knowledge and caring within the Self-Care Framework. The emphasis of the course is on assessment of the Universal Self-Care Requirements, which include air, food, activity and rest, elimination, water, solitude and social interaction. Promotion of normalcy and prevention of hazards will be addressed within the Universal Self-Care Requirements. The focus is on the use of educative/supportive nursing system and effective therapeutic communication to care for patients with selected self-care deficits. Professional, ethical and legal standards of nursing practice are introduced to provide culturally-sensitive nursing care. Opportunities for application of nursing knowledge to clinical practice are provided through Clinical Resource Center experiences and patient care assignments in various settings. To facilitate the teaching/learning process, ongoing evaluations occur through interactions between student and faculty. (Corequisites: BI 195, EN 101, and PY 105) Clinical sites are in medical/surgical settings.

#### **NU 116 Nursing IIA 6-15-11**

Nursing IIA expands upon the concepts of nursing knowledge and caring to support growth and development over the life cycle. The emphasis of the course is on Universal, Developmental and/or Health Deviation Self-Care Requirements. The student focuses on the educative/supportive and partially compensatory nursing systems and employs effective therapeutic communication to care for patients with selected self-care deficits throughout the life cycle. Professional, ethical and legal standards of nursing practice are utilized to provide holistic and culturally-sensitive nursing care throughout the life cycle. Planned learning experiences provide the student with the opportunity to coordinate environmental and technological resources in the delivery of patient care. Opportunities for analysis of principles and concepts of nursing knowledge are provided through Clinical Resource Center experiences and patient care assignments in various settings. To facilitate the teaching/learning process, ongoing evaluations occur through interactions between student and faculty. (Semester 2 Prerequisites: NU 115; EN 101 & PY 105 and a minimum grade of "C" in BI 195; Corequisites: BI 196 and PY 220) (Semester 3 Prerequisites: PY 220 and a minimum of grade of "C" in BI 195 & BI 196; Corequisites: BI 202 and MT 124 or higher level math excluding MT 129; MT 251 strongly

recommended) Clinical sites include maternal/child, pediatrics and gerontology settings.

#### **NU 117 Nursing IIB 6-15-11**

Nursing IIB expands upon the concepts of nursing knowledge and caring to support growth and development over the life cycle. The emphasis of the course is on Universal, Developmental and/or Health Deviation Self-Care Requirements. The student focuses on the educative/supportive and partially compensatory nursing systems and employs effective therapeutic communication to care for patients with selected self-care deficits throughout the life cycle. Professional, ethical and legal standards of nursing practice are utilized to provide holistic and culturally-sensitive nursing care throughout the life cycle. Planned learning experiences provide the student with the opportunity to coordinate environmental and technological resources in the delivery of patient care. Opportunities for analysis of principles and concepts of nursing knowledge are provided through Clinical Resource Center experiences and patient care assignments in various settings. To facilitate the teaching/learning process, ongoing evaluations occur through interactions between student and faculty. (Semester 2 Prerequisites: NU 115; EN 101 & PY 105 and a minimum grade of "C" in BI 195; Corequisites: BI 196 and PY 220) (Semester 3 Prerequisites: PY 220 and a minimum of grade of "C" in BI 195 & BI 196; Corequisites: BI 202 and MT 124 or higher level math excluding MT 129; MT 251 strongly recommended) Clinical sites include mental health and medical/surgical settings.

#### **NU 178 LPN-RN Completion 4-10-7**

Nursing 178 introduces the student to the advanced role of the associate degree nurse and the concepts of nursing knowledge and caring within the Self-Care Framework. The course expands upon the concepts of nursing knowledge and caring to support growth and development over the life cycle. The emphasis of the course is on Universal, Developmental and/or Health Deviation Self-Care Requirements. The student focuses on the educative/supportive and partially compensatory nursing systems and employs effective therapeutic communication to care for patients with selected self-care deficits throughout the life cycle. Professional, ethical and legal standards of nursing practice are utilized to provide holistic and culturally-sensitive nursing care throughout the life cycle. Planned learning experiences provide the student with the opportunity to coordinate environmental and technological resources in the delivery of patient care. Opportunities for analysis of principles and concepts of nursing knowledge are provided through Clinical Resource Center experiences and patient care assignments in various settings. To facilitate the teaching/learning process, ongoing evaluations occur through interactions between student and faculty. Clinical sites include mental health and medical/surgical settings.

#### **NU 215 Nursing III 4-15-9**

Nursing III incorporates principles and concepts from nursing knowledge and liberal arts education. The emphasis of the course is on the patient with commonly occurring illnesses. The student focuses on the wholly compensatory nursing system and evaluates effective therapeutic and collegial communication to enhance health outcomes. Planned

learning experiences provide the student with the opportunity to utilize microsystem resources, evidence-based practice, quality improvement processes and safety standards in the delivery of patient care. The student demonstrates accountability for the professional, ethical and legal standards of nursing practice to provide holistic and culturally-sensitive nursing care throughout the life cycle. Opportunities to utilize critical thinking, clinical reasoning, and humanistic values are provided through Clinical Resource Center experiences and patient care assignments in various settings. To facilitate the teaching/learning process, ongoing evaluations occur through interactions between student and faculty. (Prerequisites: NU 116, NU 117, & a grade of "C" or higher in MT 124 or higher level math (excluding MT 129) or MT 251; Corequisites: EN xxx, IT 102, and PI 242) Clinical sites are in medical/surgical settings.

## **Orthopaedic Technology**

#### **ORTH 101 Orthopaedic Anatomy & Physiology I 3-0-3**

This course is an introduction to the anatomy and physiology of the musculoskeletal system and related structures. Attention will be directed toward structural make-up, group composition, relationships, and location of each bone. Common fractures and treatments will be discussed in detail. Also covered will be normal and abnormal growth and development and the response to injury and disease, as well as the response of related structures to the mechanisms of injury and disease.

#### **ORTH 102 Orthopaedic Anatomy and Physiology II 3-0-3**

This course is a continuation of Orthopaedic Anatomy & Physiology I with a focus on common orthopaedic injuries and conditions of muscles, ligaments, tendons, and nerves, and their treatments. Also covered will be the disruption to continuity to the musculoskeletal system and related structures resulting from congenital, emergent, or opportunistic diseases and trauma and their treatments. (Prerequisite: ORTH 101)

#### **ORTH 103 Basic Radiology Interpretation 3-0-3**

This course will cover the history of radiology, and gives the student the basics of radiographic image production. Students will be introduced to the viewing and interpretation of plain orthopaedic radiographs, MRI's, and other types of permanent imaging relating to orthopaedics, terminology relating directly to the skeletal system and fracture healing, and describing a fracture as it relates to the radiographic image.

#### **ORTH 104 Physical Assessment of the Orthopaedic Patient 3-2-4**

A comprehensive course that provides integration of knowledge and terminology utilized for orthopaedic patient physical assessment. Included are life span differences and assessment of acute and chronic patient orthopaedic problems. Lab time covering the application and use of various orthopaedic devices, their complications, and contraindications is an intrinsic part of this course, allowing students hands-on experience with these products. Students will learn how to do custom measurements along with brace fitting techniques. Braces will be matched up with their

commonly used diagnoses for better conceptual understanding of how these devices affect patient outcomes. Medical coding and reimbursement procedures will also be discussed. (Prerequisites: ORTH 101, 103, 105, 112, and 116)

### **ORTH 105 Casting and Splinting I 2-2-3**

This area is an integral part of the practice of an orthopaedic technologist. Topics to be covered will include the types, application, functions, and materials of the various casts and splints, as well as basic terminology related to the subject. Students will acquire a working knowledge of anatomy specifically relating to casting and splinting, the proper use of external aide devices commonly associated with casting and splinting, such as crutches, canes and walkers, and transfer of patients from wheel chairs and beds. Attention will be given to the removal of casts and splints, as well as the skills associated with providing patient instructions. A \$500 specialty supplies fee will be assessed for all students taking ORTH 105.

### **ORTH 112 Traction 0-3-1**

This lab course will teach students the basic principles of traction, different types of traction, traction set-up and application, and complications and contraindications.

### **ORTH 113 Orthopaedic Patient Care 2-2-3**

This course is an introduction to patient care in an orthopaedic environment. Students will be introduced to the basic elements of professional interaction with patients, their families, and the orthopaedic surgeon. Topics will include communication skills, basic orthopaedic terminology and abbreviations, medication fundamentals critical to the orthopaedic setting, OSHA standards, patient safety, patient transfers, and patient education. In the lab setting, students will learn to take blood pressure, pulse, and BMI measurements, as well as wound care and routine and emergency procedures. (Prerequisite: ORTH 101, 103, 105, 112, and 116.)

### **ORTH 114 Custom Bracing 1-2-2**

This lecture and lab course will cover various orthopaedic devices. Students will learn custom brace fitting techniques along with complications and contraindications to be aware of. Medical diagnoses for these braces will be reviewed. Medical coding for reimbursement for all orthopaedic devices will also be discussed. (Prerequisites: ORTH 101, 103, 105, 112, and 116)

### **ORTH 116 Sterile Techniques 1-3-2**

This lab course will provide students with an understanding of invasive and non-invasive procedures, aseptic technique, and instrumentation, and with the practical skills associated with assisting the orthopaedic surgeon with procedures. Students will be assigned to orthopaedic surgical sites for observation during the semester.

### **ORTH 205 Casting and Splinting II 2-2-3**

Students will learn advanced casting techniques along with windowing of a cast, protection of pins and external hardware, pin care, and wound care. A \$500 specialty supplies fee will be assessed for all students taking ORTH 205. (Prerequisite: ORTH 105)

### **ORTH 220 Senior Externship and Capstone Experience 1-16-6**

This capstone experience provides students with an opportunity for concentrated clinical experience in an orthopaedic office or hospital setting, in which students will practice the skills they have learned in the classroom and laboratory on real orthopaedic patients under the direct supervision of an orthopaedic clinical supervisor and orthopaedic provider. Clinical placement will be provided by the Program Coordinator. In addition, students will be required to work in small groups to make a presentation to the class on an advanced topic related to the field of orthopaedic technology. Lecture hours also include a review for the national licensure exam in orthopaedic technology. (Prerequisites: Successful completion of all other courses in the Orthopaedic Technology program and permission of the Program Coordinator for Orthopaedic Technology)

## **Paralegal Studies**

Associate Degree only = #

Certificate only = \*

Both Associate Degree and Certificate = \*\*

### **\*PL 101 Foundations of Paralegal Studies 2-0-2**

The Foundations of Paralegal Studies course is comprised of two sections, the Introduction to the Legal Profession and a Pre-Employment Seminar. Introduction to the Legal Profession covers in detail the legal systems of the United States, in both the Federal courts and the New Hampshire state courts. Students will also be introduced to the Federal and the New Hampshire constitutions, to the legislative processes and to a "how to" approach to the law. Practical experience in drafting court documents, conducting initial client interviews and investigating cases will be gained. Ethical rules and regulations governing lawyers and paralegals will also be covered. The Pre-Employment Seminar includes writing a resume, drafting a cover letter, refining interview techniques, and conducting an independent job search. In addition, NHTI, Concord's Community College has career and placement counselors available for customized counseling sessions.

### **\*PL 103 Causes of Action in Contract and Tort 2-0-2**

For the purpose of this course, a "cause of action" is defined as a right the law gives and will enforce for one to recover something from another. It is the legal foundation from which the plaintiff derives the right of action against a defendant. The course is limited to the elements and defenses of various causes of action in contract and tort; it does not address remedies. (Prerequisites: PL 101 or permission of department head of Paralegal Studies)

### **\*PL 104 Legal Research 3-0-3**

The paralegal will be able to assist in most aspects of legal research in support of the drafting of clear and concise legal writings. Functional skills acquired in this course include a working knowledge of federal and state statutory research including legislative history; federal and state case law reporter systems; the hierarchy of the federal and state court systems; legal form books; law digests; case and statutory citators; legal treaties; legal periodicals; legal encyclopedia; and, both local and national standards of citation used in

legal writing. An introduction to the use of LEXIS will also be included. (Prerequisites: PL 101 or permission of department head of Paralegal Studies) **A \$100 fee will be assessed for all students taking PL 104. This fee will cover costs associated with ABA dues, Lexis/Nexus, Franklin Pierce Law Center Library, Supreme Court Library and PLS Associate Membership.**

#### **PL 106 Introduction to Legal Studies 3-0-3**

Introduction to Legal Studies covers in detail the legal systems of the United States, in both the Federal courts and the New Hampshire state courts. Students will be introduced to an overview of substantive and procedural law, legal research, interviewing and investigative skills. Ethical rules and regulations governing lawyers and paralegals will also be covered.

#### **PL 107 Contracts and Torts 3-0-3**

The contract portion of the class will cover Contract law from formation, defenses and remedies for breach. Likewise, various civil wrongs in which the victim is entitled to a remedy in the form of damages, including negligence, product liability, trespass and defamation, are addressed in the Torts section of the course. (Prerequisites: PL 106 or permission of department head of Paralegal Studies)

#### **PL 110 Litigation and Trial Preparation 3-0-3**

The student will be able to assist in virtually all phases of litigation. Functional skills acquired include preparing and maintaining the file; gathering information through client interviews; drafting pleadings; organizing and indexing documents; tracing evidence; examining public records; and preparing briefs and memoranda. (Prerequisite: PL 106 and PL 107 or permission of department head of Paralegal Studies)

#### **PL 221 Real Estate 3-0-3**

The student will be able to assist in virtually all phases of transactions in real property. Functional skills acquired include: conducting title searches; assisting in preparation and drafting of deeds, contracts of sale, leases and abstracts of title; gathering and reviewing documentation necessary in mortgage transactions; recording deeds and mortgages; and organizing and witnessing documents at the closing. (Prerequisites: PL 106, PL 107 or permission of department head of Paralegal Studies)

#### **PL 225 Legal Research and Writing 3-2-4**

The paralegal will be able to assist in most aspects of legal research in support of the drafting of clear and concise legal writings. Functional skills acquired in this course will include a working knowledge of federal and state statutory research including legislative history, federal and state case law reporter systems, the court systems, legal form books, law digest, case and statutory citators, legal treaties and legal periodicals. In addition, an introduction to the use of LEXIS will be included. Furthermore, the student will develop the specific writing skills necessary for the paralegal. Preparation of trial memorandum and appellate court briefs will also be covered. Emphasis will be on brevity, clarity, and precision of expression together with the refinement of editing skills. (Prerequisites: PL 106, PL 107 and PL 110 or permission of department head of Paralegal Studies) **A \$100 fee will be**

**assessed for all students taking PL 225. This fee will cover costs associated with ABA dues, Lexis/Nexus, Franklin Pierce Law Center Library, Supreme Court Library and PLS Associate Membership.**

#### **PL 231 Business Organizations and Bankruptcy 3-0-3**

The student will be able to assist in the formation, daily administration, reorganization and dissolution of a corporate entity. Functional skills acquired include: preparing articles of incorporation; satisfying state filing requirements; taking minutes at meetings of board of directors; preparing registration materials for regulatory agencies; and preparing bankruptcy petitions, claims and other documents. (Prerequisites: PL 106, PL 107 or permission of department head of Paralegal Studies)

#### **\* PL 241 Family Law 1-0-1**

The student will examine the substantive and procedural law and the legal ethics relating to marriage, divorce, support and custody issues, and will be prepared to assist the attorney in drafting pleadings and completing preliminary research relative to these aspects of family law. (Prerequisites: All PL courses at 100 level or permission of department head of Paralegal Studies)

#### **PL 242 Domestic Relations Law 3-0-3**

The student will examine the substantive and procedural law and the legal ethics relating to marriage, divorce, and custody issues, and will be prepared to assist the attorney in drafting pleadings and completing preliminary research relative to these aspects of Domestic Relations Law. (Prerequisites: PL 106 and PL 107 or permission of department head of Paralegal Studies)

#### **PL 251 Probate Estates and Trusts 3-0-3**

The student will be able to assist in the planning and administration of the decedent's estate. Functional skills acquired include: assisting with estate planning; collecting assets; notifying beneficiaries; assisting in preparation of Federal and State Estate Tax Returns; submitting documentation to the Probate Court; transferring securities; drawing checks for the Executor's signature; and maintaining account records. (Prerequisites: PL 106 and PL 107 or PL 101 and PL 103, or permission of department head of Paralegal Studies.)

#### **PL 261 Criminal Process 1-0-1**

The student will examine the various elements of New Hampshire criminal practice and procedure and will trace the steps by which the process is completed, from the initial interview through the post-trial procedure. (Prerequisites: All PL courses at 100 level or permission of department head of Paralegal Studies)

#### **PL 262 Criminal Law and Procedures for the Paralegal 3-0-3**

The student will examine the various elements of New Hampshire criminal practice and procedure and will trace the steps by which the process is completed, from the initial interview through the post-trial procedure. (Prerequisites: PL 106, PL 107, and PL 110 or permission of department head of Paralegal Studies)

### **PL 270 Internship 0-9-3**

The internship offers the opportunity to combine the theoretical and practical issues of the classroom in the workplace setting. Students are required to complete a specified number of hours in a law office or law-related environment. Weekly meetings will be held with the internship coordinator to discuss the ongoing experience. (Prerequisite: All 100 level PL courses or permission of department head of Paralegal Studies)

### **\* PL 271 Legal Writing 1-0-1**

This course focuses on the specific writing skills necessary for the paralegal. The assignments involve practical examples of paralegals' work products, as demonstrated in the areas covered in the Certificate curriculum. Preparation of a trial court memorandum and an appellate court brief will also be covered. Emphasis will be put on brevity, clarity, and precision of expression together with a refinement of editing skills. (Prerequisites: All other 100 level PL courses or permission of department head of Paralegal Studies; corequisite: PL 110)

## **Paramedic Emergency Medicine**

### **PM 111 Paramedic Procedures 1-3-2**

This performance based course focuses on the broad spectrum of paramedic procedures. Students will perform the technical skills drawn from Advanced Trauma, Advanced Cardiology, Medical Emergencies, Special Populations, and Pharmacology courses. An emphasis will be placed on the skills competencies making students eligible for advanced hospital and field clinic rotations. (Prerequisites: all fall PM courses; Corequisites: PM 126, PM 135 and PM 244)

### **PM 117 Physical Assessment 2-0-2**

A comprehensive course that provides integration of knowledge and terminology utilized for physical assessment. Included are life span differences and assessment of acute and chronic patients who present with medical problems. (Corequisites: PM 142, PM 150 and PM 161)

**Any failure in PM 117, PM 150 or PM 142 will trigger a failure in PM 161 (even if a passing grade in PM 161 has been achieved).**

### **PM 126 Pharmacology 3-0-3**

An advanced course covering Pharmacology related to paramedic practice. Includes cardiovascular, respiratory, analgesic, G.I., antibiotic and CNS medications. (Prerequisites: all fall PM courses; Corequisites: PM 111, PM 135 and PM 244)

**Any failure in PM 126, PM 135 or PM 244 will trigger a failure in PM 162 (even if a passing grade in PM 162 has been achieved).**

### **PM 135 Medical Emergencies 3-0-3**

A comprehensive course that includes the pathophysiology and management of selected medical emergencies. Critical thinking and problem solving will be emphasized using a scenario-based approach. (Prerequisites: all fall PM courses; Corequisites: PM 111, PM 126 and PM 244)

**Any failure in PM 126, PM 135 or PM 244 will trigger a**

**failure in PM 162 (even if a passing grade in PM 162 has been achieved).**

### **PM 142 Cardiology I 2-0-2**

This course focuses on the conduction system of the heart, electrocardiography, as well as interpretation and the treatment of cardiac arrhythmias. (Corequisites: PM 117, PM 150 and PM 161)

**Any failure in PM 117, PM 150 or PM 142 will trigger a failure in PM 161 (even if a passing grade in PM 161 has been achieved).**

### **PM 150 Advanced Trauma 3-0-3**

A comprehensive course that covers the assessment, pathophysiology and management of trauma including: head, spinal, chest, abdominal, soft tissue, and musculoskeletal trauma. MCI, environmental emergencies, and HAZMAT are also covered. (Corequisites: PM 117, PM 142 and PM 161)

**Any failure in PM 117, PM 150 or PM 142 will trigger a failure in PM 161 (even if a passing grade in PM 161 has been achieved).**

### **PM 161 Integration Lab I 0-3-1**

This scenario-driven course is designed to develop team leadership skills and clinical decision-making. A great emphasis will be placed on paramedic assessment skills, treatment aims and outcomes. Students will draw from the knowledge and interventions learned in Cardiology, Medical Emergencies, and Physical Assessment. (Corequisites: PM 117, PM 142 and PM 150)

**Any failure in PM 117, PM 150 or PM 142 will trigger a failure in this lab course which includes the practical portion of the above listed courses.**

### **PM 162 Integration Lab II 0-3-1**

This scenario-driven course is designed to develop team leadership skills and clinical decision-making. A great emphasis will be placed on paramedic assessment, diagnostic skills, treatment aims and outcomes. Students will draw from the knowledge and interventions learned in Advanced Cardiology, Medical Emergencies, Advanced Trauma, and Pharmacology courses. (Prerequisites: all fall PM courses; Corequisites: PM 126, PM 135 and PM 244)

**Any failure in PM 126, PM 135 or PM 244 will trigger a failure in this lab course which includes the practical portion of the above listed courses.**

### **PM 163 Integration Lab III 0-3-1**

This scenario-driven course is designed to develop team leadership skills and clinical decision-making. A great emphasis will be placed on paramedic assessment, diagnostic skills, treatment aims and outcomes. Students will draw from the knowledge and interventions learned in Special Populations. (Prerequisites: all first year PM courses; Corequisite: PM 201)

### **PM 164 Integration Lab IV 0-3-1**

This scenario-driven course is designed to develop team leadership skills and clinical decision-making. A great emphasis will be placed on paramedic assessment, diagnostic skills, treatment aims and outcomes. Students will draw from



knowledge and interventions learned in Field Operations and Advanced Paramedic Practice. (Corequisites: PM 210 and PM 278)

#### **PM 190 Introduction to the Clinical Environment 1-0-1**

A course designed to set students up for success within a variety of clinical systems. An emphasis will be placed on mandatory inservice training topics such as universal precautions, body mechanics, fire procedures, incident prevention and other clinical protocols and procedures. Interpersonal and communication skills will be an integral part of the course and students will gain an understanding of clinical documentation systems. (Prerequisites: all first year PM courses; Corequisite: PM 194)

#### **PM 194 Hospital Clinical 0-18-5**

A comprehensive hospital experience that focuses on theory, assessment skills, invasive skills, and affective behaviors expected of a paramedic. A total of 224 hospital hours. (Prerequisites: all first year PM courses; Corequisite: PM 190)

#### **PM 201 Special Populations 3-0-3**

This advanced level course includes assessment, paramedic diagnosis and treatment for all special populations including OB, Pedi, Geriatrics, Psych, Chronic Disease and patients with special needs. (Prerequisites: all first year PM courses; Corequisite: PM 163)

#### **PM 210 Field Operations 2-0-2**

An overview course covering all aspects of field practice including roles and responsibilities, medical control, written/oral communications, occupational stress, safety and legal considerations. Protocol interpretation and introduction to research design are covered. (Corequisites: PM 164 and PM 278)

#### **PM 244 Advanced Cardiology 2-0-2**

This comprehensive course includes the pathophysiology, clinical manifestations, and treatment of cardiovascular emergencies. Advanced Cardiac Life Support certification (ACLS) is an integral part of the course. (Prerequisites: all fall PM courses; Corequisites: PM 126, PM 135, and PM 162)

**Any failure in PM 126, PM 135 or PM 244 will trigger a failure in PM 162 (even if a passing grade in PM 162 has been achieved).**

#### **PM 278 Advanced Paramedic Practice 2-0-2**

The course is designed to integrate paramedic knowledge, skills and behaviors through practice and lecture. An emphasis is placed on detailed paramedic assessment, diagnosis and priorities in treatment. Students will develop leadership skills in the management of medical, traumatic, and psychological problems. This course will also lead to National Registry written exam preparation. Career opportunities, affective behaviors and preparation for entry into the EMS job market will also be discussed. (Corequisites: PM 210 and PM 164)

#### **PM 290 Transitional Advanced Life Support 0-8-2**

An intermediate field experience where a student will ride 100 hours with an advanced life support unit. The student will serve as a team leader on 10 calls. This clinic can be

utilized any semester a student needs additional ALS time. The same clinical manual and grading criteria will be used as in PM 296 and PM 297. This clinic may not be taken more than twice. Students electing to enroll in PM 290 must receive a passing grade before progressing in the program. (Prerequisites: successful completion of PM 194 and all first year courses)

#### **PM 291 12 Lead EKG Interpretation/Field Clinic Seminar 1-1-1**

Primary certification in the interpretation of 12 lead EKGs (including injury and ischemia patterns, normal and abnormal findings, and the 12 lead as a diagnostic tool) will be covered. Principles of ACS diagnosis/management will be the lab focus of this course. This advanced level course is a companion for field clinic (including such topics as documentation, RSI, medical control, and strategies for success).

#### **PM 296 Field Clinical I 0-9-3**

A comprehensive field experience where a student will ride 160 hours with an Advanced Life Support (ALS) service. In addition, a student is required to serve as a team leader on a minimum of 20 calls. (Prerequisite: PM 194; Corequisite: PM 200)

#### **PM 297 Field Clinical II 0-9-3**

A comprehensive field experience where students ride a total of 160 hours with an Advanced Life Support (ALS) service. In addition, a student is required to serve as a team leader on a minimum of 30 calls. (Prerequisite: PM 296)

## **Peer Mentoring**

#### **PRMT 101 Peer Mentoring Seminar 2-0-2**

A seminar for peer mentors working the NHTI departments and programs. This seminar includes readings, presentations, activities, and projects which help students develop as peer mentors. Students are expected to participate in reflection on and planning of their peer mentoring work. (Prerequisite: Faculty recommendation) Two institutional credits awarded for this course do not count toward graduation but are calculated into GPA.

## **Philosophy**

#### **PI 110 Introduction to Philosophy 3-0-3**

This course is an introduction to the methods, problems, and theories of the main branches of philosophy and the indestructible questions raised in regard to reality, truth, morality, power, meaning, purpose, and valid reasoning. Topics to be considered include the basis for beliefs concerning the nature and existence of God, experience and reason in the development of knowledge, the mind and its place in nature, freedom and determinism, and the basis and nature of morality.

#### **Special topics courses listed under PI 226 Special Topics in Philosophy**

Courses under this heading will provide the opportunity to focus on topical issues in the field of philosophy and will be

presented with an interdisciplinary approach. Faculty present material not normally covered in regular course offerings.

#### **PI 226A Comparative World Religions 3-0-3**

This course examines major "questions" or "issues" addressed by religion in general. It also examines major representative systems of religious beliefs including the practices, historical development, and sociological development and context. The religious systems will be analyzed via specific doctrines and writings of each. Different aspects of religious beliefs and practice such as the Absolute, the Human Problem, the Human Solution, Rituals, and the Meaning of History, Life after Death, Community and Ethics, and Attitudes Toward other Religions will be explored.

#### **PI 242 Contemporary Ethical Issues 3-0-3**

This course is a philosophical examination of major contemporary ethical issues. Topics may include biomedical ethics, business ethics, environmental ethics, human sexuality, and ethics related to life and death decisions. The emphasis is on acquiring the philosophical skills necessary to guide self and others in the process of ethical decision making. Cases are used for study and discussion.

## **Physics**

#### **PH 100 Pre-Engineering Technology Physics 4-2-5**

This course covers the fundamentals of mechanics. Topics included: velocity; acceleration; vectors; motion in two dimensions; Newton's Laws of Motion; work; energy; momentum and collisions. A graphing calculator will be required.\* The institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA. (Prerequisite or Corequisite: MT 109)

#### **PH 133 Physics I (Algebra-Based) 3-2-4**

A study of classical physics. Topics include: linear and projectile motion; vectors; Newton's Laws of Motion; work; energy; momentum and collisions; rotational kinematics and dynamics; translational and rotational equilibrium; gravity. A graphing calculator will be required.\* (Prerequisite or Corequisite: MT 133)

#### **PH 135 Physics II (Algebra-Based) 3-2-4**

A study of classical physics. Topics include: oscillations; mechanical waves and sound; fluids; heat; electrostatics; Ohm's law; D.C. circuits; electromagnetism; geometrical optics. A graphing calculator will be required.\* (Prerequisites: PH 133 and MT 133)

#### **PH 231 Physics I (Calculus-Based) 3-3-4**

A study of classical mechanics. Topics include: linear and rotational motion; forces; momentum; energy; gravitation; oscillations. A graphing calculator will be required.\* (Prerequisite or Corequisite: MT 205)

#### **PH 232 Physics II (Calculus-Based) 3-3-4**

The second course studying classical physics. Topics include: fluids; elasticity; thermodynamics; electricity; magnetism. A

graphing calculator will be required.\* (Prerequisite: PH 231 and MT 205)

#### **PH 233 Physics III (Calculus-Based) 3-3-4**

Topics include: sound; optics; electromagnetic waves; relativity; introduction to quantum mechanics; atomic physics; nuclear physics. A graphing calculator is required.\* (Prerequisite: PH 232)

\* Texas Instruments model TI-83 or TI-84.

## **Political Science**

#### **PS 110 American Government 3-0-3**

This course is an introduction to the basic structures of the political process in the United States. It combines attention to political activity at both the national (Federal) and the State and local levels. The topics covered include analyses of the Federal and States' Constitutions, the American political economy, State/Federal relationships, inter-branch matters between the Executive, Legislature and Judiciary branches, the elective process, activities of the public and interest groups, and the governments' handling of the public purse.

#### **PS 210 State and Local Government 3-0-3**

A survey of state and local government concentrating on their origins and development in the United States. The course includes the forms of government; executive, legislative and judicial organization and procedures; distribution of power between the levels of government; and the problems of metropolitan government.

#### **PS 220 Public Administration 3-0-3**

This course discusses the growth of the public sector and the methods by which this sector can be managed. Topics include public management techniques, effective decision-making, civil service, budgeting, public organizations, and the politics of public sector administration.

## **Practical Nursing**

All practical nursing courses integrate theory and clinical experience. Failure to receive a satisfactory grade in either theory OR the clinical experience portion of the course will result in a failing grade. All practical nursing major field courses must be passed before proceeding to the next level. Students taking the BI 195, BI 196, BI 202 sequence or BI 108 & BI 109 sequence, and Math, MT 129, must earn grades of "C" or higher in those courses to enter or progress in the nursing courses.

#### **PN 101 Practical Nursing I 4-9-7**

This course provides the student with knowledge of fundamental concepts in communication and helping processes to be utilized within the role of the LPN. Major concepts will be Orem's self-care theory, the wellness-illness continuum and health care delivery. Students will be introduced to basic nursing interventions and concepts of nutrition, ethical/legal issues of nursing, and mental health. Simulated clinical laboratory and clinical experiences will

provide opportunities for mastering basic skills. **Clinical sites are in long term care settings.** (Corequisites: BI 108, EN 101 and PY 105) **Students who are taking the BI 195, BI 196, BI 202 sequence instead of BI 108 and BI 109 must complete BI 195 by the end of PN 101. A minimum grade of "C" must be earned in BI 195 to progress to PN 102.**

#### **PN 102 Practical Nursing II 3-12-7**

This course describes nursing care that promotes wellness in clients throughout the lifespan. The nurse, within the LPN role, provides this care utilizing the nursing process. Building on Orem's universal self-care requirements learned in Practical Nursing I, the student will be introduced to developmental self-care requirements from conception to old age. Content will include: women's and child health, health deviations, alterations in immune, hematology, and respiratory function. The concepts of pharmacology, nutrition, ethical/legal issues, and mental health will be integrated throughout the course. Learning opportunities will be provided in a variety of clinical settings to facilitate integration and application of theoretical knowledge. **Clinical sites are in medical/surgical settings.** (Prerequisites: PN 101, BI 108; corequisites: BI 109, PY 220) **Students who are taking the BI 195, BI 196, BI 202 sequence instead of BI 108 and BI 109 must complete BI 196 by the end of PN 102. A minimum grade of "C" must be earned in BI 196 or BI 109 to progress to PN 103.**

#### **PN 103 Practical Nursing III 4-15-9**

This course describes nursing care for clients who have self-care deficits associated with well defined health deviations. The LPN, applying ethical and legal standards, provides this care via the nursing process. Content includes alterations in cardiovascular, endocrine, mobility, elimination, neurosensory and gastrointestinal function. The concepts of pharmacology, nutrition, ethical/legal issues, and mental health will be integrated throughout the course. Additional topics will include: scope of practice, licensure, and management skills. Learning opportunities will be provided in a variety of clinical settings to facilitate integration and application of theoretical knowledge. **Clinical sites are in rehab and long term settings.** (Prerequisites: PN 101 and PN 102; minimum of "C" or better in BI 108 and BI 109; corequisite: MT 129) **Students who are taking the BI 195, BI 196, BI 202 sequence instead of BI 108 and BI 109 must complete BI 202 by the end of PN 103. In addition, students must earn a minimum grade of "C" in BI 202 and MT 129 in order to graduate.**

## **Psychology**

#### **PY 105 Introduction to Psychology 3-0-3**

An introductory college course in psychology which focuses on the fundamental facts and principles of psychology within the broader context of contemporary personal and social concerns. Topics may include the historical development of the discipline, scientific methodology, human development, motivational theory, consciousness, sensation and perception, learning, thinking, memory, emotions, biological basis of behavior, personality theory, psychopathology, sexuality, and measurements and statistics. **Available in Honors format.**

#### **PY 205 Crisis Intervention 3-0-3**

This course focuses on the emotional aspects of individuals involved in a crisis situation. Coverage is given to the theory and management of specific situations such as stress, death and dying, drug abuse, suicide, sexual assault, disasters and violence. Consideration is also given to the functions and legalities of the mental health system. (Prerequisite: PY 105)

#### **PY 209 Educational Psychology 3-0-3**

Psychological principles are applied to the educational environment. Theories of learning, memory, cognition, and behavior management are used to help the student find an optimal instructional approach. While this course is a distribution requirement for the Associate of Science in Education program it may also be applied to a concentration of courses in Psychology or Social Sciences. (Prerequisite: PY 105)

#### **PY 210 Abnormal Psychology 3-0-3**

An overview of abnormal behavior using the *Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (DSM-5)*. Research and issues relating to the nomenclature, incidence, etiology, and treatment of the disorders will be covered. Consideration will be given to physiological, behavioral, social, cultural and cognitive variables that contribute to each condition. (Prerequisite: PY 105)

#### **PY 220 Human Growth and Development: The Life Span 3-0-3**

A study of the psychological implications of the growth and development of the human person with a special emphasis on the physical, cognitive, social, emotional and ethical dimension in infancy, childhood, adolescence, and adulthood. **Available in Honors format.** (Prerequisite: PY 105)

#### **PY 225 Social Psychology 3-0-3**

This course offers an overview to the field of social psychology, a branch of psychology that focuses on how an individual's thoughts, feelings, and behavior are influenced by and influence other people. These reciprocal influences include attention to the social and cultural environment. Predominant themes for the course include individual interpretation and social cognition, the influence and power of situations on individuals, and social relationships. Gender and cultural influences are examined from a variety of perspectives as well. Specific topics that will be studied include social cognition and perception, self-knowledge and self-esteem, attitudes, social influence, conformity, obedience, aggression, prejudice, interpersonal attraction, and prosocial behavior. (Prerequisite: PY 105)

#### **PY 226 Special topics courses listed under PY 226 Special Topics in Psychology**

Courses under this heading will provide the opportunity to focus on topical issues in the field of psychology will be presented with an interdisciplinary approach. Faculty present material not normally covered in regular course offerings. Students must have taken PY 105 or SO 105 with a grade of "C" grade or higher. (Prerequisites: PY 105 or SO 105 or other social science course with a grade of "C" or higher)

### **PY 226A Sport and Exercise Psychology 3-0-3**

This course examines theory and research of psychology as applied to athletics. It reviews the history of sport psychology as well as its application in both individual and team sports. Concepts to be discussed include individual philosophies of sports, motivation, personality of coaches and athletes, training and learning principles, mind-body relationships, and the effects anxiety, motivation, arousal and relaxation have on performance of athletes at the professional, amateur and youth levels. The sport psychology techniques used by elite athletes to improve sport performance will also be explored. Students will be asked to apply their psychological knowledge and critical thinking abilities through class participation and open discussions on professional, amateur and youth sports. Outside observations of sports from youth to professional levels will also be required. Students must have taken PY 105 or SO 105 with a grade of "C" grade or higher. (Prerequisites: PY 105 or SO 105 or other social science course with a grade of "C" or higher)

### **PY 280 Individual Counseling: Theory and Practice 3-0-3**

Discussion of the most widely used theories of counseling offering students the opportunity to integrate the theories within their own value systems. Counseling practice will consist of peer counseling process, audio and video recording critiques, and role-playing in a seminar setting. (Prerequisites: MH 187 and PY 105)

### **PY 283 Group Counseling 3-0-3**

A study of therapeutic intervention as carried out in and through a group. The course design includes academic discussion of group processes and participation in a concomitant laboratory experience. (Prerequisites: MH 187 and PY 105)

## **Radiation Therapy**

### **RTH 101 Introduction to Radiation Therapy 3-0-3**

Content is designed to provide the student with an overview of the foundations in radiation therapy and the practitioner's role in the health care delivery system. Principles, practices and policies of the educational program, health care organizations, principles of radiation and health safety and professional responsibilities, as well as ethics, law and medical terminology of the radiation therapist will be discussed and examined.

### **RTH 110 Principles and Practice of Radiation Therapy I 3-2-4**

Content is designed to provide an overview of cancer and the specialty of radiation therapy. The medical, biological and pathological aspects as well as the physical and technical aspects will be discussed. The roles and responsibilities of the radiation therapist, the treatment prescription, the documentation of treatment parameters and delivery will also be discussed.

### **RTH 115 Patient Care 1-0-1**

Content is designed to provide the student with foundation concepts and competencies in assessment and evaluation of the patient for service delivery. Psychological and physical

needs and factors affecting treatment outcome will be presented and examined. Routine and emergency care procedures will be presented.

### **RTH 150 Medical Imaging and Processing 2-0-2**

Content is designed to establish a knowledge base in factors that govern and influence the production and recording of radiographic images for patient simulation, treatment planning and treatment verification in radiation oncology. Radiation oncology imaging equipment and related devices will be emphasized. Content will also include quality management programs and continuing quality improvements in radiation oncology. (Prerequisites: RTH 101 and RTH 110)

### **RTH 180 Radiation Physics for the Radiation Therapist 2-0-2**

Discussion is designed to establish a basic knowledge of physics pertinent to developing an understanding of radiation use in the clinical setting. Fundamental physical units, measurements, principles, atomic structure and types of radiation are emphasized. Also presented are the fundamentals of x-ray generating equipment, x-ray production and interaction with matter.

### **RTH 190 Clinical Practice I 0-16-3**

Content is designed to provide sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisites: RTH 101 and RTH 110)

### **RTH 195 Clinical Practice II 0-18-3**

A continuation of Clinical Practice I requiring two 8-hour days of clinical over 11 weeks designed to provide sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisite: RTH 190)

### **RTH 200 Radiation Protection and Biology 3-0-3**

Content is designed to present basic principles of radiation protection and safety for the radiation therapist. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies and health care organizations are incorporated. Specific responsibilities of the radiation therapist are discussed, examined, performed and evaluated. Content also includes basic concepts and principles of radiation biology. The interactions of radiation with cells, tissues and the body as a whole, and resultant biophysical events, will be presented. Discussion of the theories and principles of tolerance dose, time dose relationships, fractionation schemes and the relationship to the clinical practice of radiation therapy will be discussed, examined and evaluated. (Prerequisites: RTH 101, XR 180 and RTH 150)

### **RTH 205 Treatment Planning 3-0-3**

Content is designed to establish factors that influence and govern clinical planning of patient treatment. Encompassed

are isodose descriptions, patient contouring, radiobiologic considerations, dosimetric calculations, compensation and clinical application of treatment beams. Optimal treatment planning is emphasized along with particle beams. Sterotactic and emerging technologies are presented. (Prerequisites: RTH 101 and RTH 110)

### **RTH 210 Principles and Practice of Radiation Therapy II 3-2-4**

Content is designed to examine and evaluate the management of neoplastic disease using knowledge in arts and sciences, while promoting critical thinking and the basis of ethical clinical decision making. The epidemiology, etiology, detection, diagnosis, patient condition, treatment and prognosis of neoplastic disease will be presented, discussed and evaluated in relationship to histology, anatomical site and patterns of spread. The radiation therapist's responsibility in the management of neoplastic disease will be examined and linked to the skills required to analyze complex issues and make informed decisions while appreciating the character of the profession. (Prerequisites: RTH 101 and RTH 110; corequisite: RTH 290)

### **RTH 215 Sectional Anatomy and Pathology 3-0-3**

Content is designed to study normal sectional anatomy via diagrams and radiologic images. The pathology content is broken into two parts: general pathology and neoplasia. General pathology introduces basic disease concepts, theories of disease causation and system-by-system pathophysiologic disorders most frequently encountered in clinical practice. Neoplasia provides an in-depth study of new and abnormal development of cells. The processes involved in the development and classification of both benign and malignant tumors and site-specific information on malignant tumors is presented. (Prerequisites: BI 195 and BI 196)

### **RTH 220 Radiation Therapy Physics 3-0-3**

Content is designed to review and expand concepts and theories in the radiation physics course. Detailed analysis of the structure of matter, properties of radiation, nuclear transformations, x-ray production and interactions of ionizing radiation are emphasized. Also presented are treatment units used in external radiation therapy, measurement and quality of ionizing radiation produced, absorbed dose measurement, dose distribution and scatter analysis. (Prerequisites: XR 180 and RTH 150; corequisite: RTH 293)

### **RTH 280 Registry Review 1-0-1**

This course is designed to prepare the radiation therapy student to take the national certification examination through the American Registry of Radiologic Technologists (ARRT). Various topics will be addressed each week with a practice registry exam given to complete the program. (Prerequisites: RTH 220 and RTH 210)

### **RTH 290 Clinical Practice III 0-24-4**

A continuation of Clinical Practice I and II, and the beginning clinical assignment for Radiation Therapy Certificate students, content is designed to provide sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical

facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisites: RTH 190 and RTH 195; or admission to the Radiation Therapy Certificate program)

### **RTH 293 Clinical Practice IV 0-24-4**

The fourth clinical course continues to build on the sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisite: RTH 290)

### **RTH 295 Clinical Practice V 0-23-4**

The fifth clinical course requires 32 hours per week over 11 weeks and continues to build on the sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisite: RTH 293)

### **RTH 296 Clinical Practice VI 0-32-6**

The final clinical course is designed to perfect the content of the previous didactic and clinical courses. The content is designed to provide sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Through structured sequential assignments in clinical facilities, concepts of team practice, patient-centered clinical practice and professional development will be discussed, examined and evaluated. (Prerequisite: RTH 295)

## **Radiologic Technology**

### **XR 103 Radiographic Positioning I 1-2-2**

This course introduces the student to the principles of radiography, radiographic terminology and radiation protection. This course covers the anatomy and radiographic positioning of the thoracic and abdominal viscera.

### **XR 109 Clinical Seminar 1-0-1**

The clinical seminar course is a series of continuous focused lectures pertinent to each academic/clinical semester. Radiologic science, patient care, film critiques, and advanced imaging methods will be presented and discussed.

### **XR 116 Image Production and Evaluation I 2-2-3**

A discussion of the principles leading to the production of the manifest image. Intensifying screens, radiographic film and processing, factors affecting radiographic quality, grids and accessories will be covered. (Corequisite: XR 159)

### **XR 123 Radiation Protection 3-0-3**

Topics covered in this course include: radiation quantities and units; permissible dosages; shielding methods and devices; interaction of radiation with the body tissues;

biological effects and methods of monitoring. Other topics include an overview of cell biology, radiation energy transfer determinants, molecular effects of irradiation, cell radiosensitivity and organic damage from ionizing radiation. (Prerequisites: XR 103, XR 109, XR 151 and XR 180; corequisite: XR 294)

#### **XR 151 Radiologic Nursing Procedures 2-0-2**

Discussion of the proper handling of sick, injured and infectious patients along with the proper care and use of medical equipment and supplies. Medical ethics and the medicolegal aspects of radiologic technology will be discussed.

#### **XR 159 Radiographic Positioning II and Clinical Procedures I 3-18-7**

Routine radiographic positioning of the osseous system. To be included are medical terminology, topographical anatomy and special considerations for pediatric patients. The clinical experience is an extension of the classroom where the student will develop the theory into practical skills through instruction, application, critique and evaluation on common procedures. Students will participate in a one-hour weekly clinical seminar. (Prerequisites: XR 151 and XR 180; corequisite: XR 116)

#### **XR 164 Radiographic Positioning III and Clinical Procedures II 3-18-7**

Routine and radiographic positioning of the biliary, gastrointestinal and urinary tracts, the reproductive and central nervous systems and skull, as well as examinations of the salivary glands, soft-tissue and joint structures. Imaging of the breast will be discussed. Also included are medical terminology, topographical anatomy and special considerations for pediatric patients. Clinical experience is continued in this course. Students will participate in a one-hour weekly clinical seminar. (Prerequisites: XR 159; corequisite: XR 220)

#### **XR 165 Radiographic Clinical Procedures III 0-23-4**

A continuation of the clinical component of XR 164. Students will complete their first clinical assignment and build on the procedures taught in XR 103, XR 159 and XR 164. Four 8-hour clinical days per week over 11 weeks are required. Students will participate in a one-hour weekly clinical seminar. (Prerequisites: XR 103, XR 159 and XR 164; corequisite: XR 203)

#### **XR 180 Radiographic Equipment Operation and Maintenance 3-0-3**

A basic review of algebra and the physical principles of matter, leading to tube production of electricity with its ramifications pertinent to the field of radiologic technology. Basic radiation producing circuitry is discussed including closed circuit television and videotaped recording. The course will also include an overview of radiation therapy, nuclear medicine and ultrasonography.

#### **XR 203 Advanced Radiographic Procedures 3-0-3**

A basic review of algebra and the physical principles of matter, leading to tube production of electricity with its ramifications pertinent to the field of radiologic technology.

Basic radiation producing circuitry is discussed including closed circuit television and videotaped recording. The course will also include an overview of radiation therapy, nuclear medicine and ultrasonography. (Prerequisites: XR 116 and XR 220; corequisite: XR 165)

#### **XR 209 Clinical Seminars II 3-0-3**

This is a capstone comprehensive course that reviews and interrelates concepts previously covered in the two-year curriculum. It provides students with a meaningful approach to evaluate previous learning with radiographic film critiques, case presentations, journal article reviews and clinical assignments. The student will develop and present a research project based on pathology to different body systems with radiographic imaging methods used to demonstrate the pathology. Principles of quality assurance and quality control will also be covered. (Prerequisites: successful completion of all previous XR courses in the curriculum; corequisite: XR 295)

#### **XR 220 Image Production and Evaluation II 2-2-3**

Topics covered in this class include automatic exposure control, technique charts, tube rating charts, tomography, grids, computerized radiography and digital radiography. Factors affecting radiographic quality and fluoroscopy will also be covered. (Prerequisite: XR 116; corequisite: XR 164)

#### **XR 294 Radiographic Clinical Procedures IV 0-24-4**

A continuation of XR 165. Some students will be required to rotate through a second clinical affiliate for the purpose of learning specialized procedures as part of this course. An approximate total of 360 hours is required. Students will participate in a one-hour weekly clinical seminar. (Prerequisites: XR 159, XR 164 and XR 165; corequisite: XR 123)

#### **XR 295 Radiographic Clinical Procedures V 0-24-4**

A continuation of the clinical practices of the program. Students will spend three days a week in the clinical site. Students will refine their skills in preparation for the workplace and complete all required competencies for the program. (Prerequisite: XR 294; corequisite: XR 209)

## **Real Estate**

#### **RE 101 Fundamentals of Real Estate 3-0-3**

Fundamentals course in real estate in preparation for the licensing exam. The course meets the statutory requirements of the New Hampshire Real Estate Commission for salesperson examinations. Topics discussed include: listing, NH rules and regulations, types of interest in real estate, real estate taxes, liens, financing, appraising, closing statements, etc.

#### **RE 127 Introduction to Real Estate Appraisal 3-0-3**

This course is an examination of the principles and concepts of real estate valuation. Students will develop an understanding of the markets in which buyers and sellers interact. Topics include basic appraisal methodology, the three approaches to value - direct sales comparison, cost,

and income. The concept of highest and best use will be examined.

### **RE 224 Real Estate Finance and Investment 3-0-3**

This course will develop an understanding of the nature and cycle of real estate finance, investment and taxation. Topics include: money and the monetary system; government activities in real estate finance; the secondary mortgage market; sources of funds; fiduciaries and semi-fiduciaries; the legal, financial and tax implications of real estate investment and investment criteria; and instruments. (Pre/Corequisite: RE 101 or permission of department head of Business Administration)

### **RE 225 Property Management 3-0-3**

An examination of the growing profession of Property Management within the real estate industry, including the economics and performance objectives of the property manager. Differences in residential versus commercial management, shopping centers, office buildings, condos, mobile homes, resorts, hotels, etc., will be discussed. (Prerequisite: RE 101 or permission of department head of Business Administration)

## **Reading**

### **RDNG 100 Critical Reading 3-0-3**

Students will use active reading strategies to comprehend and retain both literal and implied meaning in college content areas and other genres. Course emphasizes critical thinking, vocabulary development, and confidence building. **Students may enroll in this course only in consultation with an academic advisor who recommends the course based on assessment test scores. The three institutional credits awarded for this course do not count toward graduation requirements but are calculated into GPA.**

## **Robotics and Automation Engineering Technology**

### **RB 110 Machine Tools and CNC Machines 3-3-4**

This course covers an introduction to the basic machining processes: sawing, lathe work, milling machine work, hole making or drilling, and grinding processes using conventional machine tools. The course then introduces automated machining processes using computer numerical controlled, CNC, machining centers. The laboratory portion of the course covers the use of manual or traditional machine tools as well as CNC machines.

### **RB 205 PLC Programming 3-3-4**

Students will develop a thorough understanding of modern, industry-standard PLC hardware and software to enable them to use PLCs effectively. Topics include the PLC as a task specific computer; program scan; relay ladder logic; digital and analog 110; MCR; sequencers/drums; functions and function blocks; RLL, SCL, FBD; Human Machine Interface (HMI); and other industry related topics. Numerous industry examples will be explored and discussed. Labs will emphasize program organization, documentation, audience awareness,

maintainability, robustness, fault tolerance, and debugging. (MT 124 with a grade of "C" or higher and CP 107 and EL 101, each with a grade of "C" or higher OR permission of the Department Head of Robotics and Automation Engineering Technology)

### **RB 210 Robotics and Automation I 3-3-4**

This course is an introduction to fixed and flexible automation equipment. An emphasis is placed upon flexible equipment components such as the industrial robot. Robot topics include history, geometric configuration, component subsystems, robot safety, basic programming and operation, and end effector design. Laboratory work includes the use of industrial robot arms to perform various independent functions such as assembly and material handling processes. (MT 140 and RB 110, each with a grade of "C" or higher and CP 107 with a grade of "C" or higher OR permission of the Department Head of Robotics and Automation Engineering Technology)

### **RB 220 Robotics and Automation II 3-3-4**

A continuation of the Robotics and Automation I course covering advanced topics which include the integration of robots and CNC machines into manufacturing cells. Other equipment studied includes motion control devices, such as motors and sensors, conveyors and parts feeder mechanisms, use of vision systems as well as other automation equipment used in manufacturing. The integration of automation equipment such as PLCs, motion control devices, and vision systems is also covered. The laboratory work includes the use of PLCs, robots, CNC machines, and other automation equipment. (Prerequisites: RB205 and RB210 each with a grade of "C" or higher.)

### **RB 250 Major Field Project 3-0-3**

The Major Field Project is a semester long project in the student's major field of Robotics and Automation Engineering Technology. Each student will have the chance to experience real-world problem solving that will soon characterize their professional career. With this project on their resume, students will gain an advantage on the competition when it comes to launching their careers or gaining admission to bachelor level programs at other colleges. The Major Field Project involves problems typical of those found in the student's professional discipline and addresses challenging research issues. Each student project will culminate in a written and oral report and a poster on Project Presentation Day. (Prerequisites: EN101, EN120 or EN125, and RB220 each with a grade of "C" or higher.)

## **Science**

### **SC 104 Astronomy and Space 3-2-4**

An introductory course designed to acquaint students with the complexities of the universe. Topics covered include: stars and planets; nebulae; galaxies; black holes; origins of the universe; past and current contributions of the space program. The lab component consists of frequent outdoor observations, use of telescopes, and scheduled trips to astronomical sites and planetariums.

### **SC 107 Introduction to Meteorology 3-2-4**

This course is an introduction to the fundamentals of weather

and climate. Topics include: observing weather; physical properties and processes of the atmosphere; weather systems; hazardous weather (thunderstorms, tornadoes, and hurricanes); basics of forecasting; clouds; air pollution; climate change. The lab component consists of group exercises, hands-on experiments, and use of the Internet to explore the topics of weather. This course requires regular student access to the Internet.

### **SC 110 Alternative Energy Fundamentals 3-2-4**

Energy systems play a critical role in everyday life. This lab-based course will serve as an introduction to alternative energy systems. Students will study key concepts, terminology, and definitions used by all energy systems, as well as typical energy consumption patterns and their environmental and economic consequences. In addition, alternative energy sources will be studied along with their benefits and challenges. Laboratory exercises will include power and energy measurements, power conversions, and investigations into various energy sources such as wood, bio-fuels, wind, solar, water, and fuel cells. (High school Algebra I recommended.)

## **Sociology**

### **SO 105 Introduction to Sociology 3-0-3**

An introductory study of the concepts, principles, and applications of the social science method in general and of sociology in particular. A review of some of the crucial sociological problems of today, involving the relationship of the individual to society and groups of individuals to one another. Some topics included are culture, race, class, social mobility, and social change. Reference is made to the historical and economic forces in the U.S. that are responsible for some of these problems. Available in Honors format.

### **SO 205 The Individual and Society 3-0-3**

This course examines the relationship between individuals and their social context. Specific emphasis is on the social experience stemming from an individual's participation in social groups, interactions with others, and the emergence of social structures from these interactions. From this perspective, several major theories are discussed such as socialization, identities and the self in social construction, attitudes and attitude change, social perception, social order and conformity, language and social communication, and social behavior in groups. (Prerequisite: SO 105 or PY 105 or permission of the instructor)

### **SO 214 Race and Ethnic Relations 3-0-3**

This course will examine social and historical experiences of the major minority groups in order to better understand their social, cultural, and economic status, and group relations in the United States. Contemporary topics will include: diversity, assimilation, ethnic identity, prejudice, discrimination, racism, class, gender, immigration, inequality, and poverty. This course provides an opportunity to examine ideas relating to such diverse issues as the relationship between attitudes and behaviors, the complexity of class, power, and conflict, and the interplay between economic and political systems. (Prerequisite: SO 105 recommended)

### **Special topics courses listed under SO 226 Special Topics in Sociology**

Courses under this heading will provide the opportunity to focus on topical issues in the field of sociology and will be presented with an interdisciplinary approach. Faculty present material not normally covered in regular course offerings. (Prerequisite: PY 105 or SO 105 or other social science course appropriate to the topic)

### **SO 226A Service, Citizenship and Community (SRV) 3-0-3**

This course introduces students to the interdisciplinary study of community and the particular role citizen participation plays in constructing communities and accomplishing public goals. Students will engage in various ideas, debates and strategies regarding the development of communities while engaging in 20 hours of community service in area agencies or grassroots nonprofit community organizations. The promises and challenges of civic life will be examined by focusing on such topics as: the history and philosophy of community service; processes, structures and collaboration in community service; the power of local associations and organizations to maintain or improve the quality of life in their communities; the use of public and private resources for community services; the education of real-world problem solvers; energy, technology and transportation; housing, food and garbage; health and healing; mass media and the arts. **Service Learning is a component of this course.** (Prerequisite: at least one course in the social sciences or permission of the Department Head of Social and Behavioral Sciences)

### **SO 240 Marriage, Family and Personal Relationships 3-0-3**

This course will examine concepts and issues associated with family life and personal relationships. A variety of social problems that impact personal relationships, marriage, and the family will be addressed that have resulted from social, cultural, political and economic changes in society. Such issues as gender role socialization, diversity of family forms, men and women in cross-cultural perspective, men and women in the work place, poverty and families, reproductive and parenting rights, sexuality, mate selection, the internal dynamics of relationships, domestic violence, marital dissolution, and future family trends will be examined throughout the semester. All together, such changes in the world outside the family have profound impact on what happens inside the family. Such changes have profound consequences on how individuals conduct their personal and social lives together. The questions that this course will raise and attempt to answer will hopefully enable us to live together in adulthood with considerably more ease than most currently experience. (Prerequisite: An introductory sociology or psychology course is recommended.)

### **SO 250 Conflict Resolution in Modern Society 3-0-3**

This course provides an overview of theories and research concerning the nature of conflict and methods for resolving conflict. The foundation of the course is social systems theory; the course examines conflicts among social institutions and conflicts among diverse populations. The effects of conflict upon the individual are considered. The



course provides the student/practitioner with the theoretical framework for analyzing and resolving conflict. (This course does not meet the minimum Social Science requirement for the NHTI's Associate degrees or Professional Certificate programs.)

### **SO 298 Travel/Study Abroad Experience 3-0-3**

Students will learn about another country through on-site study that may include visitation to historic sites, libraries, archives, cultural events, and museums. The history, culture, economy, and politics of the host country will be examined. Students will increase their cultural awareness and cross-cultural sensitivity through exposure to people from different countries and cultures.

As a school-sponsored travel abroad experience (**at student expense**), this course combines the equivalent of three credits of classroom and field experience. A project is required to document the learning experience. (Prerequisite: PY 105, SO 105, or permission of the Department Head of Social and Behavioral Sciences) (May be repeated for credit with permission of the Department Head of Social and Behavioral Sciences.)

## **Sports Management**

### **SM 101 Introduction to Sports Management 3-0-3**

This introductory course emphasizes basic management principles as they relate to the business of sports. Students are introduced to sports marketing, sports law, sports supervision, sports media, sports ethics, recreational sports management and other related areas. There is an emphasis on developing and improving communication skills. An overview is provided with regard to career opportunities in this field.

### **SM 170 Sports Marketing 3-0-3**

This course focuses on marketing issues as they relate to sports-related enterprises. A variety of marketing techniques and approaches are analyzed to broaden students' backgrounds in this area and to better allow them to develop effective and comprehensive sports marketing plans.

### **SM 180 Public Relations and Advertising for the Sports Industry 3-0-3**

This course provides a cross-disciplinary approach to a variety of promotional issues that sport managers routinely confront. Public relations and advertising professionals offer insights into how sports-related endeavors and businesses can raise public awareness about products and services. (Prerequisites: SM 101 and EN 101)

### **SM 210 Sports and Fitness Facilities Management 3-0-3**

This course exposes students to the many elements and dynamics associated with managing a sports or fitness facility. Students will visit a variety of structures, arenas, and facilities and will gain an understanding of what is required to develop and successfully administer and market such facilities.

### **SM 211 Sports Tourism 3-0-3**

Sport provides a significant impetus for travel in

contemporary society, and this course focuses on the relationship between the sports and tourism industries. The study of sports tourism draws from the disciplines of psychology, sociology, geography, management, leisure, and recreation behavior. Typically, the course will include a five-day trip (at student expense) to a location such as Orlando, Florida, to visit world-class sports and convention facilities.

### **SM 220 Sports Communications 3-0-3**

This course seeks to provide the student with an appreciation of the unique dynamics associated with the sports communication field. Students will better understand the expectations associated with developing a sports story, a sports news release, and/or a sports opinion piece, via traditional print media or electronic media - radio, television, and/or the Internet. A review of journalistic ethics will be included. Students will gain first-hand experience with regard to producing television and radio broadcasts of live sporting events. (Prerequisites: EN 101 and EN 120; SM 101 strongly recommended)

### **SM 225 Sports Law 3-0-3**

This course focuses on the legal issues unique to the sports world and to sport managers. Numerous case studies and precedents are examined, as well as how they relate to current situations involving professional, intercollegiate, interscholastic and community sports and athletic activities.

### **SM 250 Sports and Society 4-0-4**

This course is designed to raise awareness with regard to the sociology of sport and how cultural practices in the world of sport can have significant social, economic, and political consequences. Discussion and research should give future sport managers a broader understanding of how sport impacts different groups of people in different ways throughout this country and beyond.

### **SM 290 Sports Management Internship 0-9-3**

This course allows students opportunities to experience real-life sports management situations "in the field." Internships are cooperatively sponsored by participating partners. The course approach and content can be designed to match the needs of the sponsor with the desires of the student, as the student gets hands-on opportunities to participate in the practical application of the sports management concepts and principles studied in the classroom. Students have completed successful internships with the Whittemore Center, Verizon Center, Planet Fitness, New Hampshire International Speedway, Concord Boys and Girls Club, Concord YMCA and many other local or regional facilities or organizations that are sports businesses.

### **SM 293 Managerial Decision-Making 3-0-3**

This course is designed to be a capstone course for Sports Management students to enhance and practice their critical thinking and management skills. Students will be expected to use their previously acquired expertise (in, e.g., marketing, supervision, accounting and management) and apply that to case studies and computer simulations of companies, both individually and in teams. The course will be conducted through student presentations and execution of a multi-year computer-based simulation. (Prerequisites: AC 101, SM 101, SM 170 and BU 152 or BU 270)

## Student Leadership

### LEAP 101 Exploring Student Leadership 1-0-0

Through a series of lectures, guided interaction, and group exercises, students will explore the principles of relational leadership and learn to develop individual and group leadership skills to impact their lives and their communities. Content areas include decision-making, goal setting, effective communication, servant leadership, organization and time management skills, and concrete strategies to implement change. This course will meet biweekly for eight sessions throughout the semester and is graded Pass/Non-Pass.

**(Prerequisite: minimum 2.5 cumulative grade point average or permission of instructor.)**

## Visual Arts

**Courses will be offered at Smokestack Center on North State Street in Concord.**

### VRTS 101 Introduction to Drawing 2-4-4

Students in this course will gain the basic skills and insights necessary to create drawings that are both accurate and expressive. Explorations of line, value and form will engage the eye and the hand as well as the heart. Students will gain confidence in their own vision and their ability to draw what they see.

### VRTS 102 Introduction to the Visual Arts 3-0-3

The purpose of this course is to introduce students to the languages, concepts, and practices of art through visual and art historical perspectives. Students will be engaged in discussion about the elements of art, such as content, composition, style, method and materials. Students will also be introduced to all of the visual art practices, including drawing and painting, sculpture, printmaking, photography, conceptual and installation art, video art, earthworks, and performance art, as well as craft and graphic design.

### VRTS 103 Two-Dimensional Design 2-3-3

This course is designed to provide students with a solid foundation in two-dimensional design and color theory. Students will learn the basic elements needed to form visual patterns and proceed to explore a variety of approaches relating to visual organization and pictorial composition. A section of the course will be dedicated to the fundamentals of color theory, its function and application.

### VRTS 104 Three-Dimensional Design 2-3-3

This is a foundation course introducing the student to the technical and conceptual elements for the organization and development of three-dimensional structures. Beginning projects will address the basic elements needed to explore a variety of approaches relating to form and space, then move to more complex issues involving the relationships between form and function.

### VRTS 111 Survey of Western Art History I 3-0-3

This course examines the history of western civilization through the study of objects created by people from various western cultures - from the cave paintings of the pre-historic

era to the great cathedrals of Europe during the 12th and 13th centuries. Students will study the artifacts, architecture, painting and sculpture that inform understanding of a culture's way of life, beliefs, and priorities. In turn, students will gain a deeper understanding of today's culture and society. Students will also develop the basic skills and vocabulary necessary to critique a work of art.

### VRTS 112 Survey of Western Art History II 3-0-3

This course examines the history of painting sculpture and architecture created by Western Europeans from the early 14th century through the 19th century (and beyond if time permits). These works of art will be studied as a way to understand the way of life, beliefs and priorities of these societies, as well as contemporary culture. Students will also continue to develop the basic skills and vocabulary necessary to critique a work of art.

### VRTS 115 History of Modern Art 3-0-3

This course examines the origins and development of Modern Art from the French Revolution in 1789 to the outbreak of World War II in 1939. Late 20th Century Art, including Postmodernism, and trends in Contemporary Art are introduced. Emphasis is placed on two-dimensional art, sculpture and architecture, and the creative processes employed by modern artists. Students explore individual works of art within their cultural and historical context.

### VRTS 120 Introduction to Oil Painting 2-4-4

An introduction to the basic techniques of oil painting, concentrating on the principles of color and light. Using a variety of subject matter, students will explore the problems of pictorial composition, color theory, oil-related mediums and techniques.

### VRTS 121 Introduction to Watercolor 2-4-4

This course introduces the student to the basic watercolor techniques and use of materials. It is a sequential program of study, applying the elements and principles of Two-Dimensional design to the watercolor discipline. Students will study still life, landscape, and the human form. Reference will be made to past and contemporary masters of the watercolor medium. (Prerequisite: VRTS 101 with a grade of "C" or higher)

### Special topics courses listed under VRTS 125 Introduction to the Traditional Arts

Courses under this heading allow students to work with established artists to develop skills using tools and methods used to create functional artwork throughout history.

### VRTS 125A Woodworking in the Hand Tool Tradition 2-4-4

This course will focus on the skills and insights necessary to find beautifully functional spoons in the tree and to extract them by techniques traditional to the New England farm shed. Students must attend all of the first six classes, after which no more than two absences will be allowed without penalty.

### VRTS 126 Introduction to Printmaking 2-4-4

This course introduces the student to the basic printmaking

intaglio and relief techniques and use of materials. It is a sequential program of study, applying the elements and principles of two-dimensional design to the printmaking discipline. The course is designed to give the student in-depth experimentation in creating single and multi-plate prints while encouraging creative ideas and content. Technical areas addressed include color registration, edition printing, presentation and image development, ink and paper selection. Reference will be made to past and contemporary masters of the printmaking medium (Prerequisite: VRTS 101 with a grade of "C" or higher)

#### **VRTS 130 Introduction to Photography 2-4-4**

This basic photography course is designed to familiarize the student with the use and care of photographic equipment, a 35mm manual camera, as well as developing and darkroom printing techniques. The assignments are designed to cover a variety of shooting situations, and the expectation is that the student will apply the elements of composition to and demonstrate proficient technical ability with expressive content in the making of pictures. Students should expect to provide their own 35mm camera.

#### **VRTS 133 Introduction to Figural Sculpture 2-4-4**

This course is an introduction to basic human figural sculpture, designed to develop the student's understanding of the anatomical structures of the human figure, gestural forms, constructive methods, and then applying this knowledge to create unique character and figural sculptures in traditional sculpting media, such as wire, wax, plaster, and clay. The emphasis in imagery will be: direct live model observations, translating 2-D sources into form, developing hand-eye coordination, technical discipline, and evolving a personal expressive use of materials, technique, and subject matter. All projects are designed to combine related technical, visual, and historical components. (VRTS 101 or VRTS 104 with a grade of "C" or higher)

#### **VRTS 135 Introduction to Ceramics 2-4-4**

This introduction to ceramics will focus on studio work leading to the completion of five projects. Students will learn the basics of handbuilding, the potter's wheel, kiln firing, glazing, and surface embellishment. Class time will be made up of instructor's demonstrations, group critiques, and individual studio work. Projects will stress the sculptural potential of clay with a visit into the aesthetic merit of functional vessel making. A research project, introducing students to the work of contemporary clay artists, will provide inspiration and direction.

#### **VRTS 140 Digital Photography 3-0-3**

This course addresses the basic tools, techniques, and aesthetics of digital photography and related resources. The use of the digital camera will be delivered through a series of project-based assignments, lectures, demonstrations, and critiques. Formal emphasis is placed on the creative use of camera controls, exposure, digital imaging software (including Adobe PhotoShop®) and an awareness of critical issues in contemporary photography. The use of scanning and printing techniques and controls will be included to augment output requirements. Students are required to provide their own digital single-lens reflex (SLR) camera (a minimum of 6.1 megapixel) and media cards for storing imagery files. A laptop

computer suitable for viewing and editing images and Adobe Lightroom CS2® (or later) software will facilitate additional work outside of the scheduled lab time.

#### **VRTS 193 Introduction to Photoshop 3-0-3**

This course is structured to introduce students to the powerful tools of Photoshop for manipulating digital images, photo montage and its page layout applications. Students learn the skills and techniques for creating effective digital images for presentations and their use in rendering and visualization. The course topics cover Photoshop tools: channels and layers, typography, illustration, digital file formats, adding special effects through the use of filters, color and image enhancements. (Prerequisite: working knowledge of Microsoft Windows environment)

#### **VRTS 201 Drawing II 2-4-4**

This advanced drawing class builds upon the aesthetic, technical, and conceptual foundation established in VRTS 101 (Introduction to Drawing). This observational drawing course will develop greater technical facility with materials and explore methods for translating and interpreting one's environment onto a drawing. As conceptual options and skill with materials increase, drawing will become a stronger outlet for personal and creative expression. Students will expand their understanding and use of color and work more extensively from the human figure. The historical foundation of drawing will be explored, as well as contemporary and historical trends. (Prerequisite: VRTS 101)

#### **VRTS 210 Life Drawing 2-4-4**

This advanced drawing class builds upon the aesthetic, technical, and conceptual foundation established in Introduction to Drawing (VRTS 101) with an emphasis on the human form. The student will aim to develop a knowledge of and a sensitivity to the structure, anatomy, and expressive qualities of the human form in a variety of ways including line, place, value, mass, and shape. Composition will be a consideration at all times. (Prerequisite: VRTS 101 with a grade of "C" or higher)

#### **VRTS 220 Painting II 2-4-4**

This course involves further development of skills and concepts covered in FA 120 (Introduction to Oil Painting) while emphasizing individual expression within the parameters of structured studio projects. This course is intended to advance the student's understanding of visual organization and design through the development of a personal painting vocabulary. (Prerequisite: VRTS 120)

#### **VRTS 230 Photography II 2-4-4**

This course is designed to help the student who has basic black and white exposure and development skills to further her/his understanding of the principles and techniques of photography. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work. Students should expect to provide their own 35mm camera and flash. (Prerequisite: VRTS 130 with a grade of "C" or higher)

#### **VRTS 235 Ceramics II 2-4-4**

In this second level of ceramics, students will be asked to develop a body of artwork that reflects a growing

understanding of building techniques and surface treatment. The development of personal direction and an individual artistic voice will be stressed. Projects will be concept driven, expecting students to be able to visually and verbally demonstrate the intent of the work. Focused time on the potter's wheel will open up a new creative tool, and begin a dialogue on design and function. Students will have the opportunity to explore how a variety of kilns operate and learn to create a glaze from raw materials. (Prerequisite: VRTS 135 with a grade of "C" or higher)

**VRTS 290 Visual Arts Capstone Practicum 1-0-1**

A capstone experience in which students will create an independent body of work and demonstrate their ability, present it in a professional manner, document the artwork photographically, curate their exhibition, and write their Artist Statement. The work from the Capstone Exhibition will also be included in the student's Program Exit Portfolio. The student will select a member of the Visual Arts faculty to oversee the student's capstone progress through weekly scheduled critiques, demonstrations, and discussions. Emphasis will be on the marriage of conceptual content with technical competence in the selected mediums. (Prerequisite: Successful completion of 52 credit hours in the Visual Arts degree program and permission of the Department Head of the Visual Arts program)



